Vol. 926 Number 3

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

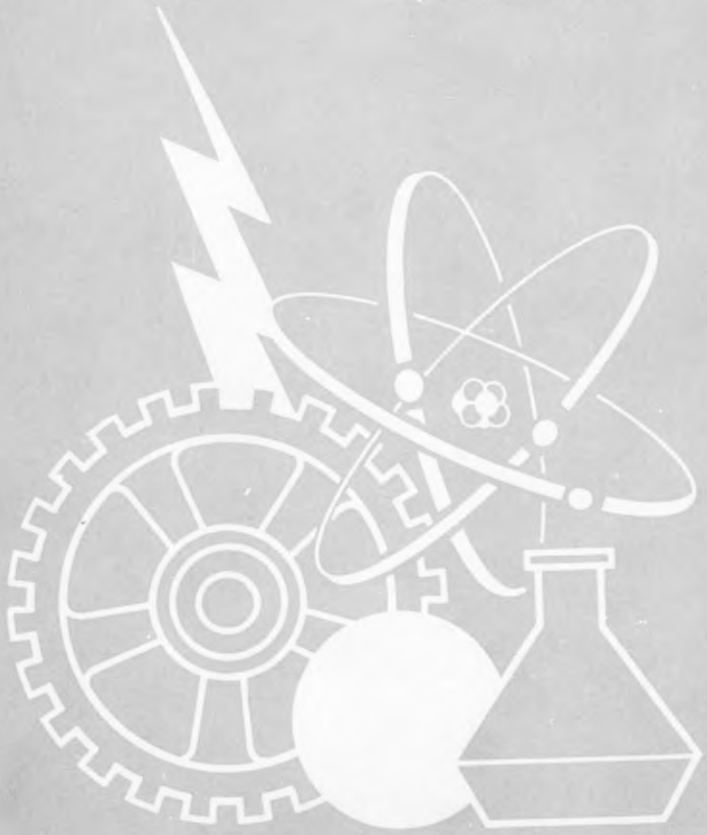
ms
SPT

OFFICIAL GAZETTE

of the
UNITED STATES PATENT OFFICE

PATENTS

September 17, 1974



U. S. DEPARTMENT OF COMMERCE
Patent Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

September 17, 1974 Volume 926 Number 3

CONTENTS

	Page
Patent and Trademark Notices	
Availibility of Rules of Practice	732
Registration to Practice	732
Manual of Patent Examining Procedure, 3rd Ed.	732
Hand Delivery of Trademark Papers	732
Calculation of Issue Fees	732
Patent Suits	732
Patent Notices	
Certificates of Correction for the Week of September 17, 1974	734
Erratum	735
Condition of Patent Applications	736
Reissue Patents Granted (28,158)	737
Plant Patents Granted (3,617)	740
Patents Granted	
General and Mechanical (3,835,470)	741
Chemical (3,836,326)	963
Electrical (3,836,689)	1030
Design Patents Granted (232,785)	1115
Index of Patentees	PI 1
Indices of Reissues, Plants and Designs	PI 47
Classification of	
Patents (Including Reissues)	PI 51
Designs and Plants	PI 54
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 55
Designs and Plants	PI 57

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $211.00 per annum, foreign mailing $52.75 additional; single copies $4.10 each.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $60.25 per annum, foreign mailing $15.10 additional; single copies $1.25 each.

CIRCULARS OF GENERAL INFORMATION concerning PATENTS, price 60 cents each.

CIRCULARS OF GENERAL INFORMATION concerning TRADEMARKS, price 50 cents each.

PRINTED COPIES OF PATENTS are furnished by the Patent Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS and DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.O.

PATENT OFFICE NOTICES

Availability of Rules of Practice

A new edition of "37 Code of Federal Regulations," revised to July 1, 1974 is now available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 for $1.75. The catalog number is GS 4.108 : 37/9–74.

This booklet is published by the Office of the Federal Register and contains all patent rules and forms, trademark rules and forms as well as the copyright rules.

The looseleaf booklet entitled "Rules of Practice in Patent Cases" is no longer available. However, the looseleaf "Trademark Rules of Practice" booklet is still available for $3.50 ($1 additional for foreign mailing).

RENE D. TEGTMEYER,
Aug. 20, 1974. *Acting Commissioner of Patents.*

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before September 30, 1974.

Bailey, James S., 6007 Williamsburg Blvd., Arlington, Va. 22207
Chapnick, Melvin Bernard, 12769 Gazebo Ct., Woodbridge, Va. 22191
Gaither, Roger Sherwin, 4912 S. 25th St., Arlington, Va. 22202
Jaeger, Hugh Douglas, 815 S. 18th St., #304, Arlington, Va. 22202
Johnson, Richard J., 5612 N. 18th St., Arlington, Va. 22205
Miller, Hoke Smith, 39 Glenbrook Road, #3G, Stamford, Conn. 06902
Prince, Louis R., 7401 Aspen Ave., Takoma Park, Md. 20012
Zupcic, Anthony M., 1085 Warburton Ave., #816, Yonkers, N.Y. 10701

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Manual of Patent Examining Procedure, 3rd Ed.

CHANGE NOTICE

Series No. 42–2
(Follows Change 42–1)

Reference : MPEP 1302.04
1302.04(f) August 21, 1974

Status of Applications Referred to in Allowed Patent Applications

Hereafter, examiners are authorized to indicate the abandonment status of applications referred to in patent applications ready for issue without a formal examiner's amendment.

In the situations where referred to applications are patented, present procedure permits the entry of "now Patent No. _____" and initialling in the margin by the examiner. Similarly, where the referred to applications are abandoned, the entry "and now abandoned" should be made and initialed in the margin by the examiner.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Hand Delivery of Trademark Papers

Trademark papers which are not accompanied by fees or by authorization to charge a deposit account, may be filed by hand in the Trademark Docket Section or in the Incoming Mail Section of the Mail and Correspondence Division. However, to avoid confusion concerning money matters, when papers which are accompanied by fees or by authorization to charge a deposit account are filed by hand, they should be delivered only to the window in the Incoming Mail Section of the Mail and Correspondence Division where personnel can immediately refer the money or the charge to the Cashier. Trademark Examiners should not be requested to receive papers for filing (either with or without fees) since there is no convenient procedure by which the Examiners can transmit such papers to proper locations.

If a receipt is desired from the Trademark Docket Section, it may take the form of a duplicate copy of the paper or of a card identifying the paper and the application. The receipt will be date-stamped at the same time as the paper and handed back to the person delivering the paper. If a receipt is desired from the Incoming Mail Section, a card should be used. The card will be date-stamped and handed back to the person delivering the paper.

When a card is used for receipt, it should contain sufficient information to identify the paper and the application clearly, such as applicant's name, the serial number and filing date of the application, the mark, and the title or a description of the paper being filed.

In the discretion of the Assistant Commissioner for Trademarks, or of the Director of the Trademark Examining Operation, or of the Trademark Trial and Appeal Board, papers appropriate for those Offices (such as petitions or briefs) may be filed by hand in such Offices.

The procedure set forth in the notice entitled "Hand-Delivery of Papers" in the OFFICIAL GAZETTE of February 26, 1974 (919 O.G. TM 180) pertains to papers for patent applications. The designation "Examining Group" used in that notice relates to the patent examining area of the Patent Office. (The equivalent designation in the trademark examining area is "Examining Division.")

RENE D. TEGTMEYER,
Aug. 21, 1974. *Assistant Commmissioner for Trademarks.*

Calculation of Issue Fees

Effective October 1, 1974, the Patent Office in calculating the balance of issue fee due, after payment of the Base Issue Fee specified by the Notice of Allowance, shall charge at the rate of $10 a page, as provided in 35 USC 41, for each printed page of specification (including claims) for which payment has not theretofore been received. As the Base Issue Fee includes a $10 charge for one printed page of specification, a balance of fee will be due for each patent which consists of more than one printed page. A "page" consists of one side of a printed sheet containing any amount of specification (including claims). A notification of the Balance of Issue Fee Due will be mailed in each such case along with the original patent grant.

The notice of February 4, 1970 published in the OFFICIAL GAZETTE [872 O.G. 1] and reproduced in the current "Consolidated Listing of Recent Official Gazette Notices . . ." [Item 53] is rescinded as of close of business September 30, 1974.

WILLIAM I. MERKIN,
Aug. 1, 1974. *Assistant Commissioner for Administration.*

Patent Suits

Notices under 35 U.S.C. 290 ; Patent Act of 1952

2,790,516, Wright and Butler, VEHICLE DISC BRAKE ASSEMBLY ; **2,921,650**, H. J. Butler, DISC BRAKE, **filed** Feb. 8, 1973, D.C., N.D. Ind. (South Bend), Doc. 73–S–20, *Dunlop Holdings Limited* v. *The Bendix Corporation*. Order entered that this cause of action be dismissed pursuant to F.R.C.P. 41(a)(1)(i), Mar. 19, 1974.

2,811,069, A. H. Faulkner, ELECTRICAL MUSICAL INSTRUMENT, **filed** Mar. 19, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c685, *Alfred H. Faulkner* v. *Seeburg Corp. and Gulbransen Company*. By agreement order plaintiff's complaint dismissed with prejudice and the defendant's counterclaim dismissed with prejudice, Dec. 3, 1973.

2,847,313, E. E. Ellies, METHOD OF TREATING FRESH MEATS, filed Nov. 8, 1971, D.C., N.D. Ohio (Cleveland), Doc. C71–1094, *Tee-Pak, Inc.* v. *St. Regis Paper Co.* Judgment from U.S. Court of Appeals reversing decision of District Court entered on Dec. 22, 1972 and remanding case for further proceedings Mar. 15, 1974.

2,860,836, H. Jordan, MOUNTING SLEEVE AND CLAMP MEANS FOR DISPOSED DEVICES; 2,879,949, same, GARBAGE DISPOSAL APPARATUS; 2,945,635, same, RESILIENT HANGING DEVICE FOR WASTE DISPOSAL APPARATUS; 2,965,318, same, WASTE DISPOSAL DEVICE HAVING NOISE DAMPENING MEANS; 3,076,611, same, GARBAGE DISPOSAL DEVICE, filed Feb. 4, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV 74–293–DWW, *Waste King Corp.* v. *The Maytag Co., Inc.*

2,879,120, Howe and Burr, LONG TWO PART FOLDING TABLE; 2,974,555, C. W. Andersen, ELECTRONIC PIANO, filed July 30, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1949, *Musitronics Inc.* v. *The Wurlitzer Co.* Complaint and counterclaim dismissed pursuant to stipulation, Feb. 6, 1974.

2,879,949. (See 2,860,836.)

2,921,650. (See 2,790,516.)

2,945,635. (See 2,860,836.)

2,965,318. (See 2,860,836.)

2,974,555. (See 2,879,120.)

3,076,611. (See 2,860,836.)

3,094,278, B. F. Kuhne, DETENT TYPE ACTUATOR FOR CALCULATING MACHINE, filed Mar. 22, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV. 74–768–FW, *Addmaster Corporation* v. *Unitrex of America, Inc.*

3,140,249, Plank and Rosinski, CATALYTIC CRACKING OF HYDROCARBONS WITH A CRYSTALLINE ZEOLITE CATALYST COMPOSITE; 3,140,263, same, CATALYTIC HYDROCARBON CONVERSION WITH A CRYSTALLINE ZEOLITE COMPOSITE CATALYST; 3,436,357, same, CATALYST AND CONVERSION OR ORGANIC COMPOUNDS IN THE PRESENCE THEREOF, filed May 29, 1967, D.C. Conn. (New Haven), Doc. 67–H–424, *Mobil Oil Corporation* v. *W. R. Grace & Company et al.* Consent judgment of infringement and injunction entered Dec. 26, 1973.

3,140,253. (See 3,140,249.)

3,174,114, M. Arditi, ATOMIC CLOCK; D. 193,989, Clement and Inhelder, CABINET FOR ELECTRONIC APPARATUS, filed Mar. 15, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–596 AAH, *Hewlett-Packerd Company* v. *Tracor, Inc.*

3,287,693, S. M. Bagno, TRANSDUCER-TRANSFORMER UNIT, filed Jan. 25, 1972, D.C., N.J. (Newark), Doc. C–155–72, *Systron-Donner Corporation* v. *Emergency Products Corporation.* Stipulation of dismissal of action, Mar. 22, 1974.

3,309,025, W. R. Malcolm, SELF-CLEANING SPRAY DEFLECTOR WEDGE FOR SPRINKLERS, filed June 12, 1973, D.C., E.D. Calif. (Fresno), Doc. F–818–C., *Rain Bird Sprinkler Mfg. Corp.* v. *Buckner Industries, Inc.* Filed stipulation of dismissal of complaint without prejudice, Mar. 25, 1974.

3,363,156, E. B. Cox, CAPACITOR WITH A POLYOLEFIN DIELECTRIC; 3,450,968, same, ELECTRICAL ELEMENTS WITH IMPREGNATED DIELECTRIC AND INSULATORS; 3,540,561, same, IMPREGNATED DIELECTRIC SYSTEMS; Re. 27,583, same; Re. 27,823, same, IMPREGNATED POLYPROPYLENE FILM IN A SEALED HOUSING; Re. 27,824, same, CAPACITOR WITH IMPREGNATED POLYPROPYLENE DIELECTRIC, filed Dec. 11, 1973, D.C.S.C. (Columbia), Doc. C/A 73–1609, *General Electric Company* v. *McGraw-Edison Company.*

3,397,001, N. R. Friedman, CLOSURE LATCH ASSEMBLY, filed Mar. 29, 1974, D.C., N.D. Tex. (Dallas), Doc. CA3 74–276–D, *Kindergard Corporation et al.* v. *Shur-Lok Manufacturing Company, Inc. et al.*

3,417,450, R. M. Zell, METHOD FOR MAKING A PLUMBING VALVE BODY, filed Mar. 21, 1974, D.C., E.D. Mich. (Detroit), Doc. 74–71314, *Brass Craft Manufacturing Company* v. *Rockwell International Corp., Building Components Division.*

3,436,357. (See 3,140,249.)

3,450,968. (See 3,363,156.)

3,499,709, R. Uhlenberg, ELECTROPHOTOGRAPHIC STRIP FILM DEVICES WITH MEANS FOR HOLDING THE FILM AWAY FROM THE PHOTOCONDUCTOR DURING FILM TRANSPORT; 3,510,217, Cirmele and Uhlenberg, ELECTROPHOTOGRAPHIC APPARATUS EMPLOYING AN ELASTIC PRESSURE PAD FOR PRESSING THE FILM AGAINST THE PHOTOCONDUCTOR; 3,635,556, R. L. Levy, ELECTRODUPLICATION APPARATUS EMPLOYING A CONDUCTIVE POROUS ELASTIC PRESSURE PAD FOR PRESSING THE RECORDING MEDIUM AGAINST THE PHOTOCONDUCTOR; 3,715,225, G. F. Day, METHOD FOR FIXING OF LIQUID TONER DEVELOPED ELECTROGRAPHIC IMAGES; 3,754,965, J. B. Mooney, METHOD FOR MAKING AN ELECTROPHOTOGRAPHIC PLATE, filed Feb. 5, 1974, D.C., N.D. Calif. (San Francisco), Doc. C–74–0280 SC, *Varian Associates* v. *Photo Physics Inc.*

3,510,217. (See 3,499,709.)

3,530,561. (See 3,363,156.)

3,589,793, L. E. Curtiss, GLASS FIBER OPTICAL DEVICES, filed June 29, 1971, D.C. Del. (Wilmington), Doc. 4165, *Lawrence E. Curtiss et al.* v. *Warner-Lambert Co.* Final decree that a permanent injunction enjoining defendants from infringing patent with consent of parties, June 29, 1971.

3,635,556. (See 3,499,709.)

3,715,225. (See 3,499,709.)

3,736,575, D. J. Mallerich, Jr., SINGLE LINE PER BIT ASYNCHRONOUS CIRCUIT AND SYSTEM; 3,757,231, C. Faustini, ASYNCHRONOUS CIRCUIT AND SYSTEM, filed Feb. 6, 1974, D.C., N.D. Calif. (San Jose), Doc. C–74–296–SC, *Fairchild Camera and Instrument Corporation* v. *Dyad Systems, Inc.*

3,754,965. (See 3,499,709.)

3,757,231. (See 3,736,575.)

3,758,051, D. D. Williams, VELOCITY CONTROL AND ORIENTATION OF A SPIN-STABILIZED BODY; Re. 26,887, W. B. McLean, PROPORTIONAL NAVIGATION SYSTEM FOR A SPINNING BODY IN FREE SPACE, filed Jan. 17, 1974, D.C. Del. (Wilmington), Doc. 74–10, *Hughes Aircraft Company, William B. McLean, and Walter G. Finch* v. *Philco-Ford Corporation.*

Re. 24,992, E. E. Ellies, METHOD OF TREATING FRESH MEATS, filed Apr. 28, 1971, D.C., N.D. Ohio (Cleveland), Doc. C71–446, *St. Regis Paper Company* v. *Tee-Pak, Inc.* Judgment from U.S. Court of Appeals reversing decision of District Court entered on Dec. 22, 1972 and remanding case for further proceedings, Mar. 15, 1974.

Re. 27,583. (See 3,363,156.)

Re. 27,823. (See 3,363,156.)

Re. 27,824. (See 3,363,156.)

D. 191,787, R. M. Heil, CLIP, filed Mar. 21, 1974, D.C., N.D. Ohio (Cleveland), Doc. C74–245, *Ruth M. Heil* v. *S. S. Kresge Company.*

D. 193,989. (See 3,174,114.)

Certificates of Correction for the Week of Sept. 17, 1974

P.P. 3,510 3,735,110
P.P. 3,530 3,738,831
Re. 27,943 3,739,252
Re. 27,958 3,740,860
Re. 27,996 3,741,122
Re. 27,999 3,741,261
Re. 28,014 3,741,586
Re. 28,034 3,741,709
D. 222,440 3,742,048
D. 230,792 3,742,189
D. 231,103 3,742,265
D. 231,279 3,742,405
3,342,826 3,742,420
3,375,247 3,742,721
3,404,869 3,743,764
3,466,308 3,744,074
3,467,276 3,744,152
3,499,105 3,744,246
3,511,342 3,744,861
3,555,051 3,744,894
3,579,535 3,746,094
3,584,024 3,746,671
3,584,118 3,747,042
3,602,356 3,747,436
3,602,818 3,748,134
3,605,103 3,750,235
3,612,771 3,750,237
3,612,976 3,750,365
3,616,040 3,750,427
3,620,626 3,750,696
3,621,718 3,750,701
3,622,960 3,750,721
3,624,109 3,750,735
3,628,852 3,750,745
3,629,812 3,750,803
3,634,261 3,750,908
3,639,503 3,750,929
3,641,179 3,751,641
3,646,122 3,751,648
3,658,746 3,752,624
3,665,598 3,752,661
3,665,788 3,752,795
3,668,118 3,752,904
3,670,074 3,753,058
3,676,131 3,753,172
3,676,696 3,753,350
3,679,800 3,754,017
3,682,588 3,754,604
3,684,616 3,754,718
3,693,474 3,754,914
3,701,767 3,755,344
3,701,841 3,755,503
3,703,496 3,755,510
3,703,663 3,755,554
3,704,383 3,755,583
3,707,485 3,756,910
3,710,034 3,756,979
3,710,699 3,757,457
3,715,345 3,758,644
3,715,378 3,759,119
3,717,014 3,759,929
3,717,270 3,760,037
3,717,872 3,760,074
3,718,622 3,760,622
3,718,903 3,760,894
3,719,086 3,761,302
3,719,396 3,761,382
3,720,624 3,761,597
3,721,787 3,761,895
3,723,686 3,761,931
3,725,525 3,762,109
3,728,335 3,762,281
3,728,350 3,762,319
3,728,391 3,762,921
3,729,334 3,763,148
3,731,683 3,763,213
3,732,104 3,763,237
3,733,513 3,763,272
3,734,890 3,763,363
3,734,924 3,763,637
3,734,972 3,763,797
3,764,123 3,780,240 3,790,079 3,796,272 3,801,555 3,810,200
3,764,246 3,780,348 3,790,141 3,796,310 3,801,659 3,810,214
3,764,317 3,780,460 3,790,231 3,796,339 3,801,665 3,810,499
3,764,631 3,780,623 3,790,286 3,796,384 3,802,019 3,810,743
3,764,914 3,780,872 3,790,299 3,796,393 3,802,023 3,810,819
3,765,105 3,781,208 3,790,355 3,796,472 3,802,150 3,810,919
3,765,184 3,781,260 3,790,397 3,796,554 3,802,225 3,810,945
3,765,193 3,781,267 3,790,532 3,796,686 3,802,500 3,811,050
3,765,910 3,781,360 3,790,541 3,796,763 3,802,598 3,811,077
3,766,030 3,781,367 3,790,583 3,796,825 3,802,890 3,811,112
3,766,038 3,781,368 3,790,631 3,796,912 3,802,942 3,811,115
3,766,244 3,781,369 3,790,728 3,796,947 3,803,012 3,811,266
3,766,270 3,781,423 3,790,915 3,797,096 3,803,133 3,811,373
3,766,367 3,781,795 3,790,955 3,797,125 3,803,226 3,811,394
3,766,556 3,781,810 3,791,237 3,797,350 3,803,262 3,811,550
3,766,884 3,782,169 3,791,436 3,797,419 3,803,352 3,811,696
3,767,012 3,782,272 3,791,510 3,797,420 3,803,511 3,811,935
3,767,425 3,782,436 3,791,621 3,797,478 3,803,670 3,811,950
3,767,771 3,782,474 3,791,631 3,797,709 3,803,839 3,812,087
3,767,795 3,783,083 3,791,748 3,797,928 3,804,067 3,812,095
3,767,810 3,783,092 3,791,798 3,797,937 3,804,082 3,812,130
3,768,056 3,783,198 3,792,007 3,797,994 3,804,147 3,812,220
3,768,444 3,783,425 3,792,022 3,798,016 3,804,201 3,812,489
3,769,212 3,783,444 3,792,079 3,798,027 3,804,204 3,812,582
3,769,542 3,783,685 3,792,090 3,798,103 3,804,469 3,812,745
3,770,005 3,783,868 3,792,116 3,798,106 3,804,725 3,812,777
3,770,360 3,783,879 3,792,121 3,798,156 3,804,763 3,812,892
3,770,404 3,783,934 3,792,339 3,798,178 3,804,775 3,812,913
3,771,066 3,783,960 3,792,379 3,798,255 3,804,851 3,813,025
3,771,128 3,784,152 3,792,519 3,798,342 3,804,921 3,813,107
3,771,355 3,784,308 3,792,563 3,798,424 3,804,926 3,813,290
3,771,431 3,784,337 3,792,702 3,798,456 3,804,936 3,813,354
3,771,769 3,784,417 3,792,732 3,798,680 3,805,188 3,813,360
3,771,853 3,784,491 3,793,039 3,798,759 3,805,286 3,813,418
3,771,943 3,784,573 3,793,072 3,798,933 3,805,332 3,813,603
3,772,019 3,784,665 3,793,112 3,798,961 3,805,349 3,813,640
3,772,038 3,784,949 3,793,149 3,799,169 3,805,357 3,813,649
3,772,283 3,785,455 3,793,236 3,799,235 3,805,376 3,813,738
3,772,362 3,785,571 3,793,363 3,799,244 3,805,386 3,813,870
3,773,363 3,786,054 3,793,381 3,799,259 3,805,652 3,813,874
3,773,588 3,786,110 3,793,415 3,799,269 3,805,873 3,813,892
3,773,711 3,786,176 3,793,438 3,799,324 3,806,014 3,813,938
3,773,725 3,786,380 3,793,505 3,799,328 3,806,261 3,814,138
3,773,803 3,786,423 3,793,566 3,799,435 3,806,300 3,814,267
3,773,806 3,786,428 3,793,575 3,799,491 3,806,323 3,814,538
3,773,855 3,786,565 3,793,594 3,799,516 3,806,456 3,814,554
3,773,957 3,786,567 3,793,633 3,799,519 3,806,471 3,814,562
3,773,961 3,786,710 3,793,704 3,799,682 3,806,552 3,814,640
3,774,146 3,786,924 3,793,730 3,799,709 3,806,647 3,814,659
3,774,396 3,787,144 3,793,741 3,799,712 3,806,653 3,814,665
3,774,513 3,787,160 3,793,871 3,799,735 3,806,960 3,814,691
3,774,565 3,787,187 3,793,916 3,799,754 3,807,064 3,814,742
3,774,920 3,787,235 3,794,242 3,799,778 3,807,097 3,814,900
3,774,943 3,787,390 3,794,480 3,799,825 3,807,123 3,815,071
3,775,087 3,787,449 3,794,633 3,799,851 3,807,145 3,815,102
3,775,431 3,787,557 3,794,655 3,799,854 3,807,477 3,815,211
3,775,478 3,787,653 3,794,689 3,799,856 3,807,491 3,815,271
3,775,530 3,787,760 3,794,711 3,799,881 3,807,639 3,815,337
3,775,819 3,788,073 3,794,811 3,799,973 3,807,704 3,815,338
3,776,120 3,788,142 3,794,865 3,799,978 3,807,996 3,815,535
3,776,169 3,788,317 3,794,882 3,800,154 3,808,129 3,815,698
3,776,531 3,788,357 3,795,127 3,800,336 3,808,136 3,815,770
3,776,823 3,788,389 3,795,168 3,800,345 3,808,169 3,815,792
3,776,925 3,788,483 3,795,205 3,800,383 3,808,192 3,815,819
3,777,107 3,788,535 3,795,291 3,800,651 3,808,195 3,815,859
3,777,159 3,788,722 3,795,386 3,800,684 3,808,469 3,816,000
3,777,299 3,788,896 3,795,501 3,800,715 3,808,926 3,816,001
3,777,448 3,788,968 3,795,552 3,800,750 3,808,958 3,816,165
3,777,707 3,788,995 3,795,652 3,800,768 3,809,000 3,816,229
3,778,546 3,789,030 3,795,734 3,800,780 3,809,028 3,817,237
3,778,709 3,789,182 3,795,750 3,800,837 3,809,088 3,817,600
3,779,248 3,789,424 3,795,763 3,800,893 3,809,098 3,817,721
3,779,307 3,789,462 3,795,786 3,800,902 3,809,131 3,817,782
3,779,345 3,789,495 3,795,915 3,801,029 3,809,234 3,817,946
3,779,372 3,789,759 3,795,922 3,801,035 3,809,239 3,818,024
3,779,703 3,789,900 3,795,929 3,801,109 3,809,450 3,818,476
3,779,714 3,789,923 3,796,074 3,801,319 3,809,554 3,819,090
3,779,932 3,789,939 3,796,099 3,801,325 3,809,646 3,819,106
3,780,019 3,789,951 3,796,126 3,801,330 3,809,748 3,819,159
3,780,020 3,789,984 3,796,221 3,801,348 3,809,778 3,819,531
3,780,039 3,790,068 3,796,259 3,801,467 3,810,103 3,819,618
3,810,118 3,819,740

Certificates of Correction—Continued

3,819,799	3,820,107	3,820,414	3,821,570
3,819,979	3,820,219	3,820,577	3,821,687
3,820,070	3,820,328	3,821,058	3,821,994
3,820,074	3,820,350	3,821,067	3,822,062

Erratum

All reference to Patent Number 3,795,165 to Heinrich Moelbert for Hydraulic Shearing Machine appearing in the OFFICIAL GAZETTE of March 5, 1974 should be deleted since no patent was granted.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 31, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-9-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-25-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	11-16-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	11-1-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-1-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	1-23-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-1-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-5-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	9-17-73
ELECTRONIC COMPONENT SYSTEMS AND DEICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-13-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	3-26-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-11-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	11-13-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-2-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	11-9-73
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	12-27-73

Expiration of patents: The patents within the range of numbers indicated below expire during September 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,804,620 to 2,807,803, inclusive
Plant Patents..... Numbers 1,638 to 1,645, inclusive

REISSUES

SEPTEMBER 17, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,158

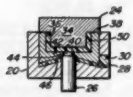
DISPLACEMENT MOLDING PLASTIC ARTICLES

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Original No. 3,685,941, dated Aug. 22, 1972, Ser. No. 48,653, May 15, 1970, which is a division of application Ser. No. 679,109, Oct. 30, 1967, now Patent No. 3,590,114. Application for reissue June 26, 1973, Ser. No. 373,827

Int. Cl. B29f *1/00*

U.S. Cl. 425—245 5 Claims



In accordance with the present invention, plasticized plastic material is confined within a chamber of variable volume, and part of the walls of the chamber are formed by a first mold part which is movable relative to the chamber. A gate opening in the first mold part is normally blocked by a movable blocking member. A second mold part is initially spaced from the first mold part and is moved into contact with the first mold part. There is a mold cavity in the mold parts. At the same time, the blocking member is moved out of the gate opening so that the mold cavity communicates with the plasticized material in the chamber. The first and second mold parts are then moved jointly to reduce the volume of the chamber and thereby inject plasticized material through the gate opening into the mold cavity. Next, the gate opening is closed by the blocking member. The mold parts and the blocking member are moved in the reverse direction to enlarge the chamber to its original volume, and then the first mold part and the blocking member are halted while the second mold part moves further in the reverse direction to its initial position to accommodate ejection of the molded article. In one embodiment, the second mold part includes two members defining the mold cavity, these members being separable to effect ejection of the molded article.

28,159

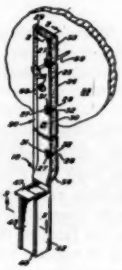
NAIL PLACING IMPLEMENT

Jack Litz, 1200 Walnut St., Philadelphia, Pa. 19107

Original No. 3,682,213, dated Aug. 8, 1972, Ser. No. 124,391, Mar. 17, 1971. Application for reissue June 27, 1973, Ser. No. 374,201

Int. Cl. B25c *3/00*

U.S. Cl. 145—46 7 Claims



A nail placing implement is disclosed which is U-shaped in cross section and having a straight edge provided with notches.

28,160

APPARATUS FOR PRODUCING BRICKS

John Lingl, Finningerstrasse 70, Neu-Ulm, Germany

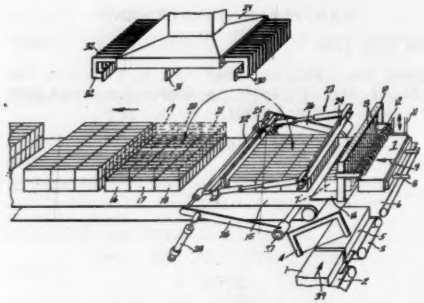
Original No. 3,602,963, dated Sept. 7, 1971, Ser. No. 870,901, July 28, 1969, which is a division of application Ser. No. 583,829, Oct. 3, 1966, now Patent No. 3,468,998. Application for reissue July 27, 1973, Ser. No. 383,105

Int. Cl. B28b *13/04*

U.S. Cl. 425—316 8 Claims

Apparatus for cutting a continuous length or strand of compressed raw material as it comes from an extrusion press and then stacking the blocks or bricks thus cut so that the facing sides of the individual bricks lie in full engagement with each other for protection from discoloration when they are fired. The apparatus includes a pair of belt

conveyors disposed in tandem for carrying the strand of material as it comes from the extruder and a cutter intermediate these first two conveyors for cutting the strand into sections. A third conveyor, which moves in the same direction as the first two, carries each section against a stop from which it is pushed laterally through a cutter frame that divides it into the desired number of bricks to form a row of such bricks. A fourth conveyor that operates intermittently is disposed at right angles to the other downstream of the cutter frame to receive the rows of bricks as successive sections are pushed through the cutter frame



one after another, so that the rows of bricks coming from the cutter are pushed transversely onto the fourth conveyor. Two groups of rows are formed on this last conveyor and are spaced from each other so that the second one to be formed can be inverted onto the other by a turnover device such that the faces of the bricks in one group are accurately aligned in registry with those of the other group. A gripper assembly then picks up the double-layer flat of bricks thus formed and places it on a kiln car. As successive double-layer flats are formed they are stacked one on top of the other until a stack of the desired height is built on the kiln car.

28,161

LINEAR INDUCTION MOTOR

Hugh Robert Bolton, London, Thomas George Fellows, Barnet, Eric Roberts Laithwaite, Surbiton, John Frederick Eastham, Long Ditton, and Ernest Frederick Needham, Whittlesford, England, assignors to Tracked Hovercraft Limited, London, England

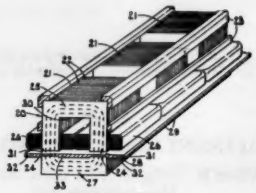
Original No. 3,585,423, dated June 15, 1971, Ser. No. 33,596, May 1, 1970. Application for reissue Nov. 7, 1972, Ser. No. 304,420

Claims priority, application Great Britain, May 2, 1969, 22,542/69

Int. Cl. H02k *41/04*

U.S. Cl. 310—13 **17 Claims**

A polyphase linear induction motor comprising a primary member having magnetic material formed with a polyphase winding and, for co-operating with the primary member, a secondary member comprising electrically conductive material backed by further magnetic material is so arranged that the working flux passes in low reluctance paths lying substantially in planes directed transversely of the motor. The depth of magnetic material required for a particular air gap flux density is therefore substantially independent of the pole pitch so that large pole



pitches and hence high synchronous speeds can be achieved with tolerable depths of magnetic material. A particular application of the invention is to high speed transportation systems in which the secondary member forms part of the prepared track.

28,162

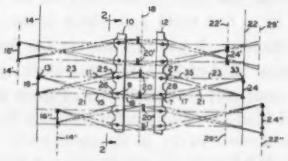
OPTICAL APPARATUS INCLUDING A PAIR OF MOSAICS OF OPTICAL IMAGING ELEMENTS

Robert H. Anderson, Evanston, Ill., assignor to Tektronix, Inc., Beaverton, Oreg.

Original No. 3,605,593, dated Sept. 20, 1971, Ser. No. 650,862, July 3, 1967. Application for reissue June 9, 1972, Ser. No. 261,224

Int. Cl. G03b *17/04*

U.S. Cl. 95—18 **37 Claims**



An optical apparatus for the transmission of light images is described including at least two mosiacs having a plurality of optical imaging elements, such as lenses or curved mirrors, supported in a two-dimensional array of elements and forming a plurality of light paths each containing image inverting and erecting elements in different mosiacs which transmit different portions of an image and recombine such image portions with their original relative orientation to reproduce the image of the viewed object. The optical elements may be lenses in a pair of lens mosaics including an inverting mosaic and an erecting mosaic which provide a plurality of lens pairs forming the light paths. A plurality of apertured plates are provided for preventing undesired light from reaching the

composite image formed on the final image surface and the lens pairs are spaced so that adjacent image portions partially overlap and the overlapping areas coincide in the final image to provide a single, complete image. A cathode ray oscilloscope camera of extremely short length is formed using such an optical apparatus.

28,163

FRAMES FOR STACKING PALLETS

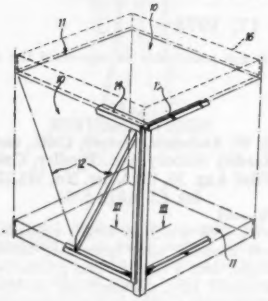
Harold Walker England, deceased, late of St. Annes, England, by Phyllis England, executor, St. Annes, England, assignor to Palletower Limited, St. Annes, Lancashire, England

Original No. 3,447,490, dated June 3, 1969, Ser. No. 693,466, Dec. 26, 1967. Application for reissue Jan. 19, 1971, Ser. No. 107,695

Claims priority, application Great Britain, Dec. 30, 1966, 58,251/66

Int. Cl. B65d *19/18*

U.S. Cl. 108—53 **3 Claims**



A frame for stacking pallets vertically, which is formed of 4 adjoining sections slidably interlocked at each corner. The frames are formed to rest on the peripheral upper surface of each pallet and include flange sections to restrain horizontal motion relative to the pallets.

28,164

METHOD AND APPARATUS FOR FILLING VEHICLE GAS BAGS

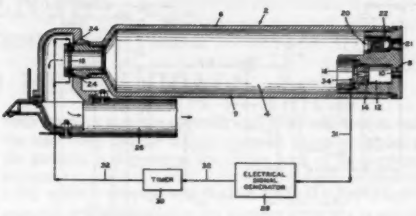
Robert L. Stephenson, Sterling Heights, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Original No. 3,674,059, dated July 4, 1972, Ser. No. 81,947, Oct. 19, 1970. Application for reissue Mar. 16, 1973, Ser. No. 342,127

Int. Cl. B65b *3/16*

U.S. Cl. 141—4 **14 Claims**

A method and apparatus for filling motor vehicle gas bags. A gas-filled cylinder is provided with an inlet pressure sensitive rupture disc and a dislodgeable outlet plug. The inlet disc is in communication with a combustible material. The material is fired, yielding a gaseous product. The outlet plug is dislodged before, concurrently or subsequent to the rupture of the inlet disc. The liberated



gas flows to a diffuser, about which a motor vehicle gas bag is disposed, whereby the gas bag is filled.

28,165

BIOLOGICAL SPECIMEN PROCESSING AND EMBEDDING APPARATUS

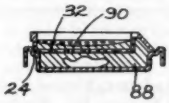
James Benjamin McCormick, Hinsdale, Ill., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Original No. 3,674,396, dated July 4, 1972, Ser. No. 74,159, Sept. 21, 1970, which is a continuation of abandoned application Ser. No. 725,722, May 1, 1968. Application for reissue May 21, 1973, Ser. No. 361,973

Int. Cl. B29c *1/00, 1/02, 1/14*

U.S. Cl. 425—117 **3 Claims**

A combination capsule and mold apparatus and treatment of a biological specimen by the use thereof is described wherein a biological specimen can be placed inside a capsule comprising an open-topped box-like open mold having a perforated bottom wall and a removable perforated cover. After the specimen has been processed inside the capsule with desired fluids, the cover is removed from the capsule to form an open mold, the specimen is transferred from the open mold to an open-topped box-like base mold, and the open mold is placed in coupled relation over the base mold. Molten paraffin is then



poured through the open mold into the base mold. After the paraffin hardens, the open mold and the rigidly attached paraffin body containing the specimen are separated from the base mold, and the open mold is mounted in the holder of a microtome for subsequent slicing of the paraffin-embedded specimen.

28,166

COMFORT CONDITIONING SYSTEM

Gershon Meckler, Atlanta, Ga., assignor to Westinghouse Electric Corporation

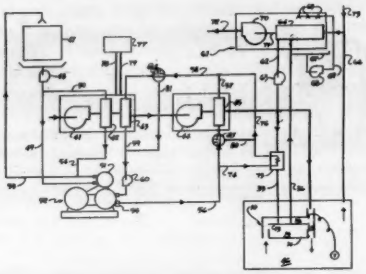
Original No. 3,193,001, dated July 6, 1965, Ser. No. 256,421, Feb. 5, 1963. Application for reissue June 11, 1973, Ser. No. 368,916

Int. Cl. B60r *1/00;* **F25b** *27/00*

U.S. Cl. 165—27 **21 Claims**

Apparatus comprising a comfort conditioning system and a lighting fixture, said conditioning system including the particular fixture and being effective to reject heat

from the fixture when such heat is not required within a space to be conditioned, and utilizing, when required, at least a part of the heat to prevent an undesirably low space temperature.



28,167

BLENDS OF POLYOLEFINS AND POLYAMIDES

Alberto Bonvicini, Terni, and Giuseppe Cantatore, Collescipoli, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Original No. 3,668,278, dated June 6, 1972, Ser. No. 76,646, Sept. 29, 1970. Application for reissue Nov. 13, 1972, Ser. No. 306,148

Claims priority, application Italy, Oct. 1, 1969, 22,766/69; Oct. 2, 1969, 22,830/69

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 L **5 Claims**

A new class of basic polyamides having a molecular weight between about 2,000 and 200,000. The polyamides are prepared by first reacting an acrylic or methacrylic ester with a monoamine and then further reacting the product obtainable with a polyamine. The polyamides are suitable for use as tinctorial modifiers for polymeric materials and particularly for crystalline polyolefins consisting essentially of isotactic macromolecules.

PLANT PATENTS

GRANTED SEPTEMBER 17, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,617

PLUM TREE

Frederic W. Anderson, Merced, Calif., assignor to Reedley Nursery, Inc., Reedley, Calif.

Filed Aug. 8, 1973, Ser. No. 386,735

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—38 **1 Claim**

A plum tree which is large, vigorous, upright to spreading, foliated with large to medium size obovate leaves, and a productive bearer of uniform, large to medium size, globose to slightly oblate, semi-freestone fruit having yellow to red flesh and very deep purple-blue skin.

3,618

PLUM TREE

Frederic W. Anderson, Merced, Calif., assignor to Reedley Nursery, Inc., Reedley, Calif.

Filed Aug. 16, 1973, Ser. No. 388,976

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—38 **1 Claim**

A plum tree which is large, vigorous, upright to spreading, foliated with large to medium size obovate leaves, and a productive bearer of uniform, large to medium size, globose, clingstone fruit having red skin and bistre green flesh.

3,619

NECTARINE TREE

Frederic W. Anderson, Merced, Calif., assignor to Reedley Nursery, Inc., Reedley, Calif.

Filed Aug. 30, 1973, Ser. No. 393,223

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—41 **1 Claim**

A nectarine tree which is large, vigorous, spreading, foliated with medium size, lanceolate leaves having a crenate margin, and a regular and productive bearer of uniform, medium size, symmetrical, globose-to-oblong, freestone fruit having yellow skin substantially entirely overspread with red at maturity, and yellow flesh.

3,620

DWARF PEACH TREE

Frederic W. Anderson, Merced, Calif., assignor to L. E. Cooke Co., Visalia, Calif.

Filed Sept. 7, 1973, Ser. No. 395,353

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—43 **1 Claim**

A genetically dwarf peach tree which is medium size, medium vigorous, spreading, foliated with large lanceolate leaves having a crenate margin and globose glands, and a productive bearer of uniform, large, symmetrical, globose, freestone fruit having yellow skin substantially overspread with red, and firm, crisp, melting, yellow flesh flecked with red.

PATENTS

GRANTED SEPTEMBER 17, 1974

GENERAL AND MECHANICAL

3,835,470

ITEMS OF APPAREL, ESPECIALLY SPORT CLOTHING

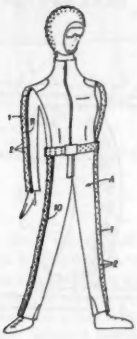
Franz Johann Greiter, Trogenerstrasse 1, Altstaetten, Switzerland

Filed Jan. 21, 1972, Ser. No. 219,785

Claims priority, application Austria, Feb. 12, 1971, 1202/71; Sept. 20, 1971, 8127/71

Int. Cl. A41d *1/08*

U.S. Cl. 2—79 **15 Claims**



The present sport clothing, for example ski pants and anoraks, is provided on its outer surface either in selected spots or all over with the brake elements in the form of surface roughening means such as spikes which are placed so as to provide a braking action when a fallen skier slides down a ski course. The surface roughening means or brake elements either are permanent parts of the fabric of which the sport garment is made or these means are removably attached to the garment.

3,835,471

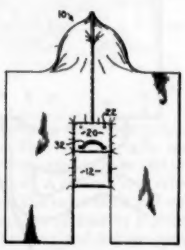
SPORTSMAN'S HOOD SEAT

Benson E. Lankford, 1517 S. Osage, Independence, Mo.

Filed July 5, 1973, Ser. No. 376,314

Int. Cl. A41d

U.S. Cl. 2—84 **3 Claims**



Protective apparel providing a cushion element for seating comfort. A water-resistant, hooded garment is designed to provide protection for the wearer from coldness and dampness. Long sides extend downwardly from a hood to provide a body wrap for a person covering legs, arms and head as well as the main body torso. A cushion element which is coupled with the garment is disposed at the center back of the garment to present a comfortable seat. Retaining structure in the form of a flap which is coupled with the seat element snaps to hold the garment in position against the element when not in use while still allowing the cushion element to be utilized. A handle is provided external to the flap for ease in carrying.

3,835,472

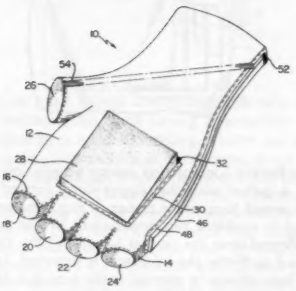
BOWLING GLOVE

James Duggins, 1745 Acreview Ln., Cincinnati, Ohio 45240

Filed Aug. 29, 1973, Ser. No. 392,567

Int. Cl. A41d *19/00*

U.S. Cl. 2—161 A **5 Claims**



A bowler's glove is provided with a fitted pocket to receive a wedge insert. The wedge insert permits the bowler to vary the amount of spin of the ball depending on the orientation of the wedge. A spring steel insert along one edge of the glove provides stiffening to assist in keeping the wrist straight, as well as providing added lift during the release of the ball. A coil spring aligned with the thumb stall assists in reminding the bowler to remove the thumb first during release of the ball.

3,835,473

WAIST-SIZE ADJUSTABLE TROUSERS

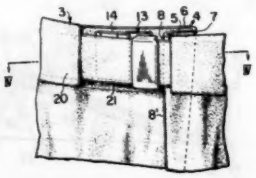
Taro Toyoda, 14-3,3-Chome, Kumoi-Machi, Gifu, Japan

Filed July 11, 1972, Ser. No. 270,738

Claims priority, application Japan, Mar. 15, 1972, 47-31064

Int. Cl. A41f *9/00*

U.S. Cl. 2—237 **3 Claims**



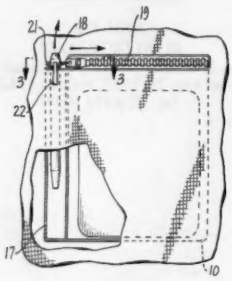
Trousers having an adjustable waist provided with a tuck consisting of folds in a longitudinal direction between two

waist portions of the trousers, one fold of the above tuck being aligned with the crease line of the front of the trousers, the other folding line being on the back side of the tuck. A fastening band lies between the first fold portion and the other waist portion and an elastic band may lie between the back side fold of the tuck and the other waist portion. The size of the waist of the trousers is thus freely adjustable to the size of the waist of men who wear the trousers.

3,835,474
SAFETY POCKET CONSTRUCTION

Karl D. Williamson, 1085 Rose Ave., Mountain View, Calif. 94040

Filed Sept. 10, 1973, Ser. No. 395,755
Int. Cl. A41d *27/20*
U.S. Cl. 2—251 **4 Claims**

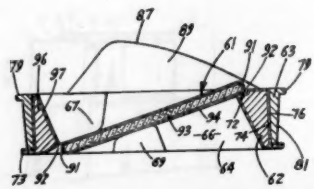


A Safety Pocket construction having a zipper on the inside pocket of a jacket with the zipper head formed to move toward the armpit to open the zipper. A ring is mounted on the zipper head to enable a pen or pencil to be slid through the ring and clipped onto the pocket to prevent the zipper from being moved until the pen or pencil is removed. In one embodiment here shown, a narrow vertical pocket for accommodating a pen or pencil is formed directly next to the jacket and towards the lapel to permit the pen or pencil to be slid through the ring and clipped onto the narrow vertical pocket to secure the zipper in the closed position to prevent a pickpocket from removing the pen or opening the zipper without the wearer's knowledge.

3,835,475
PIVOTING DISC-TYPE HEART VALVE WITH TWO-PIECE BASE

Francis W. Child, Maple Plain, Minn., assignor to The Regents of the University of Minnesota, Minneapolis, Minn.

Division of Ser. No. 124,754, March 16, 1971, Pat. No. 3,737,919. This application Oct. 17, 1972, Ser. No. 298,237The portion of the term of this patent subsequent to June 12, 1990, has been disclaimed.
Int. Cl. A61f *1/22*
U.S. Cl. 3—1 **39 Claims**

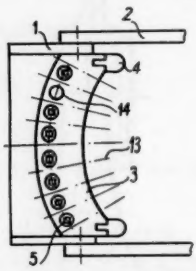


A heart valve having a base cooperating with a free floating pivoting disc to control the flow of blood through the valve. The disc has a substrate covered with a coating of silicon-alloyed Pyrolite carbon. The base can be a one-piece housing having side arms or two members joined together to confine the disc in a pivoting relationship with the housing. The disc pivots about a chordal axis and rotates about its center. The two members of the base have substrates with coatings of silicon-alloyed Pyrolite carbon.

3,835,476
SYSTEM OF PULSATORS FOR AN ELECTRO-OPHTHALM

Stanislaw Wysocki, ul. Grochowska 54 m.19, and Janusz Chalecki, ul. Grochowska 54 m.28, both of Warszawa, Poland

Filed Dec. 15, 1972, Ser. No. 315,668
Claims priority, application Poland, Dec. 18, 1971, 152277
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **3 Claims**

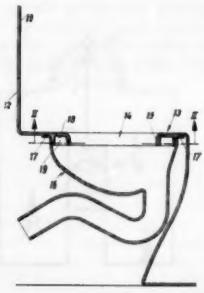


System of pulsators constituting the main unit of an electro-ophthalmic device, that is an apparatus mounted on a helmet worn on the head and providing pseudo-vision to blind persons. The pulsators transmit pulses onto the person's forehead by means of coils and slides pulsating therein.

3,835,477
TOILET ASSEMBLY

Hans Gunter Moller, 287 Delmenhorst Oldenburger Landstr. 50, Delmenhorst, Germany

Filed May 1, 1972, Ser. No. 248,831
Claims priority, application Germany, May 12, 1971, 2123475
Int. Cl. A47k *4/00, 13/02;* **B32b** *31/32*
U.S. Cl. 4—9 **3 Claims**



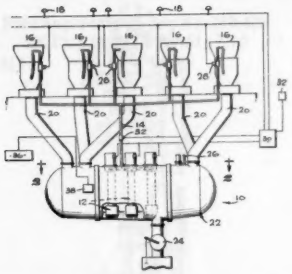
A toilet assembly having a seat member (13) provided with an opening (14) defined by a downwardly turned inner edge (15), and a bowl member (16) adhesively secured to the un-

derside of the seat. A centering ring (18), having an inverted U-shaped cross-section, accurately positions the bowl with respect to the seat opening during assembly and provides a smooth surfaced flush channel (19). The centering ring may be a separate piece or may be integrally molded with the upper edge of the bowl.

3,835,478
MULTIPLE RECIRCULATING TOILET

Michael R. Molus, Chatsworth, Calif., assignor to Monogram Industries Inc., Santa Monica, Calif.

Filed June 8, 1972, Ser. No. 260,738
Int. Cl. E03d *1/22, 5/016*
U.S. Cl. 4—11 **7 Claims**

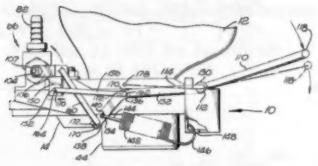


A pumping system for a plurality of recirculating toilets sharing a common tank is described. A variable volume pump has an internal by-pass valve which is controlled by the fluid pressure in the output line, to prevent excessive fluid pressure at the toilets. More than one pump is provided in the system for increased reliability. When a pump is operated, a time delay circuit is connected to a pressure switch which energizes the "next" pump if the fluid pressure in the line does not exceed a predetermined pressure within a set time interval.

3,835,479
TOILET VALVE ASSEMBLY

Kenneth Arthur Milette, Laguna Beach, and Tim Minoru Uyeda, South San Gabriel, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 4, 1973, Ser. No. 347,858
Int. Cl. E03d *11/10, 5/08*
U.S. Cl. 4—79 **6 Claims**

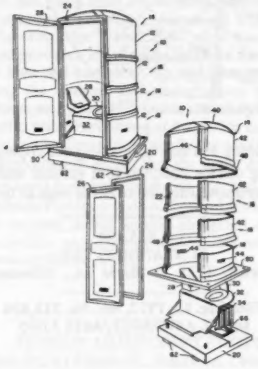


A valve assembly for a flush-type toilet for recreational vehicles or the like. The valve assembly includes a flat gate valve blade which is mounted to open and close the discharge outlet of the toilet bowl. A rotary water valve is also mounted on the valve housing. The valve blade and water valve embody actuating arms which are rotated by a pivoted lever through suitable linkage. The lever and linkage cooperate to provide an overcenter toggle action to actuate the gate valve blade more rapidly and with higher closing force than the water valve. The linkage is pivotally connected to the lever and to the actuating arms for the valves, and the lever is pivotally mounted on the housing, without separable fasteners.

3,835,480
CHEMICAL TOILET CABANA

George W. Harding, Warren, Mich., assignor to Poly-San Corporation, Sarasota, Fla.

Filed July 11, 1973, Ser. No. 378,316
Int. Cl. A47k *11/02*
U.S. Cl. 4—116 **10 Claims**

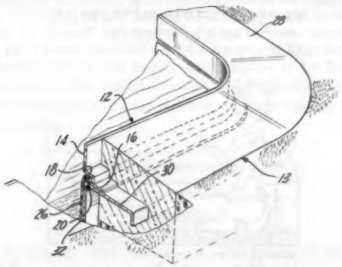


A chemical toilet cabana comprising a plurality of initially identical shell sections, each having a dome-like roof, side walls terminating in a bell-like enlarged lower end and a base flange extending outwardly from the enlarged lower end of the side wall. The base flange is removed from a first shell section to form a cabana top. The dome-like roof is removed from a second shell section to form a cabana base and both the dome-like roof and the base flange are removed from other shell sections to form intermediate cabana shell members. The sections are stacked one upon the other with the wall of a section fitted within the enlarged lower end of the section immediately thereabove and with the walls of the sections substantially in vertical alignment. The base flange of the bottom section is fastened to a base skid which includes a filler material for weight and stability of the cabana.

3,835,481
SWIMMING POOL COPING

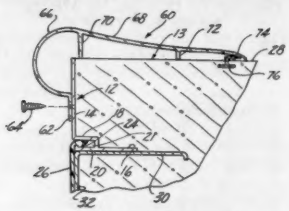
John M. Engelhart, and William P. Morrish, both of Clio, Mich., assignors to Quality Pool Supply Co., Clio, Mich.

Filed Dec. 20, 1972, Ser. No. 316,660
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.21 **9 Claims**



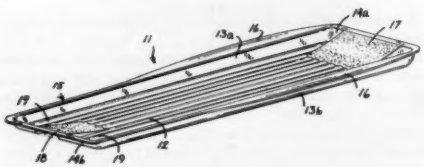
A one-piece extrudable, first coping for a swimming pool includes a horizontal section and a vertical section with means

formed at the intersection of the horizontal and vertical sections for gripping the upper edge of a vinyl liner. The coping is attached to the metal liner for the pool and a deck is formed



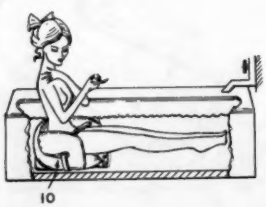
around the coping and aids in retaining the coping in place. A second coping can be attached to a vertical wall of the first coping to extend upwardly and over the edge of the deck.

3,835,482
SUNTANNING TUB
James R. Tersch, 4725 E. Marie Ln., Minneapolis, Minn. 55422
Filed Dec. 11, 1972, Ser. No. 313,834
Int. Cl. A47k *3/022*; **A61h** *33/00*
U.S. Cl. 4—177 **6 Claims**



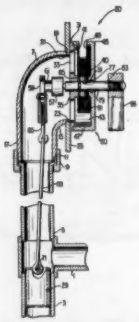
A shallow, tub-like receptacle for use by sunbathers in obtaining a suntan. The receptacle is defined by an elongated rectangular bottom with relatively short end and side walls projecting upwardly therefrom, the end walls being of different height so that the tub is deeper at one end than the other. A peripheral flange extends laterally outward from the end and side walls, the flange being widened along each side over a predetermined length to define arm rests for the user. The tub further includes inclined ramp surfaces disposed at each end thereof to receive and comfortably support the sunbather's head and feet in a position of repose.

3,835,483
SELF-HELP BATH SEAT
William M. Emery, deceased, late of New Providence, N.J., and by William W. Emery, administrator, Berkeley Heights, N.J.
Filed June 30, 1970, Ser. No. 51,039
Int. Cl. A47k *3/12*
U.S. Cl. 4—185 S **1 Claim**



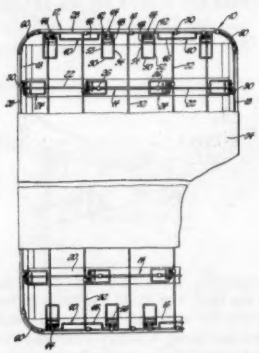
A seat for a bath tub to ease the user into the tub and to provide a natural lift when getting out resulting from buoyancy. An initially flat device which, when inflated, provides a seat portion and three upright sides and includes four suction cups for adherence of the seat to the tub when desired, and optional tie means to fasten the device about the buttocks, leaving the hands free.

3,835,484
BATHTUB OR THE LIKE DRAIN CONTROL AND OVERFLOW REGULATOR
Mikio Kato, 1003 Nottingham Pl., La Vale, Md. 21502
Filed Dec. 27, 1972, Ser. No. 318,898
Int. Cl. E03c *1/232*, *1/24*
U.S. Cl. 4—199 **5 Claims**



A rotary drain control for the outlet of a bathtub or the like includes an overcenter crank operating the main drain valve and an adjustable rotary valve for controlling access to the overflow drain adjacent the top of the tub or the like to provide for variations in water level in said tub.

3,835,485
BOX SPRING ASSEMBLY
Chester E. Klicki, Warren, Mich., assignor to Lear Siegler, Inc., Detroit, Mich.
Filed Jan. 19, 1973, Ser. No. 324,923
Int. Cl. A47c *23/02*
U.S. Cl. 5—247 **13 Claims**



A box spring assembly including a frame upon which a plurality of spring units are supported to define a load-supporting surface upon which a mattress or the like may be disposed. The spring units include a plurality of spring members having fishmouths at each end with load-supporting straight sections interconnecting the fishmouths and extending transversely or

perpendicular to the sides of the assembly. The particular improvement resides in auxiliary spring members having a pair of spaced apart fishmouth portions interconnected by a support portion with the support portion being generally U-shaped whereby the auxiliary spring members are connected to the end border wires of the assembly yet the U-shaped support portion is spaced inwardly from the border wire for providing additional support adjacent the ends of the assembly.

3,835,486

TELESCOPING NOVEL STAND ASSEMBLY

Roland A. Benoit, Danielson, and John Curran, Fitchville, both of Conn., assignors to InterRoyal Corporation, New York, N.Y.

Filed Aug. 14, 1972, Ser. No. 280,425
Int. Cl. F16m *11/08;* **A61g** *7/10*
U.S. Cl. 5—317 R **6 Claims**

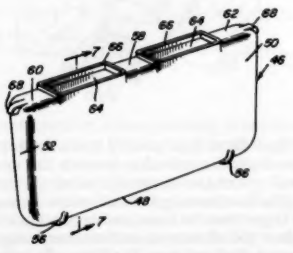
A support stand, particularly for hospital beds, includes outer and inner telescoping members arranged one within the other and which are telescopically movable for varying the heighth of the stand. The outer member carries a cross piece on its upper end having ends formed in a spiral to provide means for engaging articles thereon. The two members may be adjusted in height and locked into position by a releasable lock mechanism which includes a plurality of balls which are wedged into engagement between the two members for locking purposes and released for unlocking purposes.

3,835,487

BEE FEEDER FOR HIVES

Donald A. Grigg, Harper, Oreg., assignor to Silverbow Industries, Inc., Vale, Oreg.

Filed Mar. 22, 1973, Ser. No. 343,709
Int. Cl. A01k *53/00*
U.S. Cl. 6—5 **1 Claim**



A honey-bee feeder which is adapted to replace a brood frame which has been withdrawn from a conventional box-type beehive. One embodiment of the invention is characterized by a one piece container made by "blow molding" from plastic material and is of requisite size and shape to be effectively fitted into the beehive. The side and end walls slope toward the bottom wall and provide a tapered easy-to-stack container. Upper end portions of the respective end walls are provided with horizontal outstanding lugs which can be hooked over and hung from the existing support rails in the beehive. The bottom wall has indentations which constitute bead-type elevating feet. These "feet" when in use elevate the container and provide a crawl space between the opposed bottoms of the hive and container. To minimize immersion and bee drowning the interior wall surfaces may be roughened and, in addition, an optionally useable arcuately bowed screen guard promotes reliable climbing and ultimate escape.

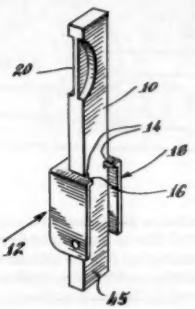
The second embodiment is basically the same as the aforementioned embodiment except that the upper end is provided with narrowed and centered supporting lugs and the otherwise open top embodies integral end and centered reinforcing webs which, thus located, define spaced elongated openings, and conjointly stabilize and prevent undesirable warping of the walls, particularly the sidewalls.

3,835,488

TENSION ADJUSTMENT TOOL

Joseph Dastoli, Sr., 41 Martin St., Stamford, Conn. 06902

Filed May 18, 1973, Ser. No. 361,711
Int. Cl. B25f *1/00*
U.S. Cl. 7—1 R **9 Claims**



A tension adjustment tool for use in a ski binding and employing a central handle having a thinner portion at one end adapted for lateral adjustment of a screw type tension adjuster, and a bracketed cuff mechanism swivelably mounted to the opposite end of the handle and adapted to be fit over a spring tensed collar, normally employed for holding a tension adjusting mechanism in conjunction with the release portion of a ski binding.

3,835,489

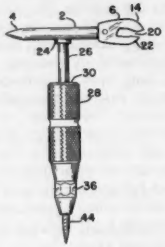
UNIVERSAL CONE EXTRACTOR

James R. Lagace, 6761 Jackson Dr., and Nelson D. Sherman, 6751 Jackson Dr., both of San Diego, Calif. 92119

Filed July 25, 1973, Ser. No. 382,389
Int. Cl. B25f *1/00*
U.S. Cl. 7—1 R **1 Claim**

For use in removing conical spreader and snap tie assemblies which hold concrete forms, a tool for removing external

portions of the assemblies after the concrete has hardened. The tool consisting of a lever operated claw socket tie breaker

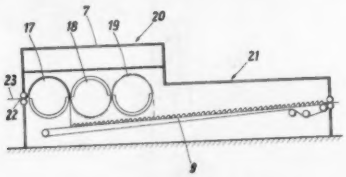


and a percussively operated, transversely disposed threaded member.

3,835,490
PROCESS FOR THE CONTINUOUS TREATMENT OF TEXTILE MATERIALS

Heinz Fleissner, Egelsbach, near Frankfurt, Germany, assignor to Vepa AG, Basel, Switzerland

Continuation of Ser. No. 13,988, Feb. 25, 1970, abandoned, Continuation-in-part of Ser. No. 831,952, June 10, 1969, abandoned. This application Apr. 18, 1973, Ser. No. 352,348
Claims priority, application Germany, Feb. 26, 1969, 1909646; Jan. 31, 1970, 2004390
Int. Cl. B05c *9/14*; D06c *1/08*, *7/02*
U.S. Cl. 8—149.1 **8 Claims**

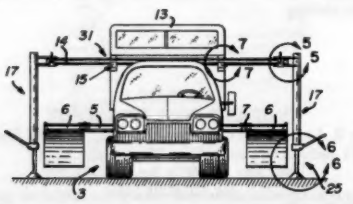


The present disclosure is directed to a process for the continuous treatment of fibrous and thread-like materials in the form of slivers, roving or fibrous ribbon wherein uniform treatment, for example, uniform dye application and uniform setting of the dyestuff is effectively achieved.

3,835,491
TRAILERABLE BOAT FOR A CAMPER AND METHOD FOR TRANSFERRING THE CAMPER

Harry E. Aine, 675 Sharon Park Dr. No. 201, San Mateo County, Calif. 94025

Filed Feb. 1, 1971, Ser. No. 111,364
Int. Cl. B63c *13/00*
U.S. Cl. 9—1 T **24 Claims**

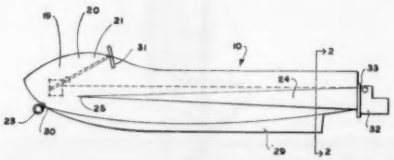


The camper body is transferred from the bed of a truck to a trailered foldable pontoon boat by attaching a pair of lifting beams across opposite ends of the camper body. Four jacks, one attached to each end of the lifting beams, serve to lift the camper from the bed of the truck. The camper is lifted a sufficient amount such that the truck can pull forward and pull a camper body platform, provided on the trailered boat, into position below the camper body. The camper body is then lowered onto the platform and locked into position on the boat. The platform has a height sufficient to provide a pilot house region under the cab-over portion of the camper body. A collapsible wind screen is attached between the cab-over portion and the deck of the boat to screen off the pilot house. Seats are provided in the camper body platform such that when the camper is not in use the platform provides a plurality of passenger seats.

3,835,492
WATER SLED

Richard Orchowski, 30 Bibeau Bay, Winnipeg, Manitoba, Canada

Filed Oct. 16, 1972, Ser. No. 297,974
Int. Cl. B63b *5/00*
U.S. Cl. 9—6 **3 Claims**

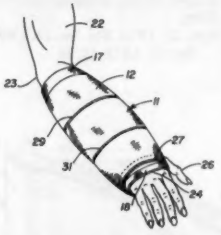


A light weight unsinkable hull is towed behind a power boat. The hull is made of aluminum or glass fibre and contains floatation compartments filled with styrofoam. Side fin assemblies give stability and the keel can also be moulded on the underside. A steering wheel and rudder assembly gives greater flexibility to directional changes.

3,835,493
SWIM FIN

Gerald J. Grivna, Littleton, Colo., assignor to J. Wickham Clark, Golden, Colo., a part interest

Filed Apr. 19, 1973, Ser. No. 352,784
Int. Cl. A63b *31/04*
U.S. Cl. 9—307 **9 Claims**



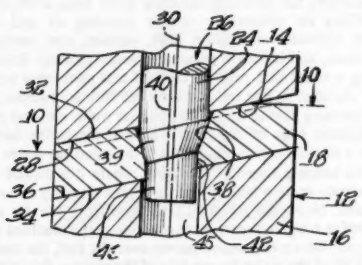
A swim fin of fabric type material that is applied to a swimmer's appendages for extension between the operative extremity and a location closer the trunk or body of the swimmer. The fin at its midpoint is of a width corresponding to or slightly larger than the associated appendage at such position with fore and aft extensions therefrom being of various shape, size and configurations. The fin is to be attached to the swimmer at its fore and aft ends thereby providing a ballooning effect between the points of attachment during power stroke type swimming movements for the delivery of an in-

creased propulsion effect. Preferably the fin is made permeable to water so a through flow of water will provide a desirable fin shaping effect and fin control.

3,835,494
WATER WALKING PONTOONS
Earle T. Dougherty, 3420 N. 71st Ave., Phoenix, Ariz. 85033
Filed Dec. 10, 1973, Ser. No. 423,429
Int. Cl. A63c *15/04*
U.S. Cl. 9—310 D **14 Claims**

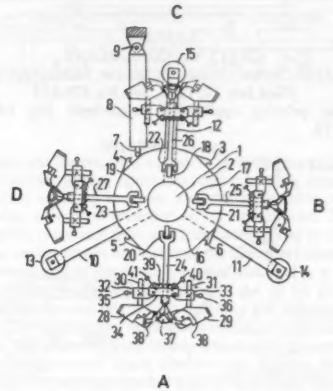
A water walking apparatus including a pair of elongated pontoons by which a user is able to propel himself through the water with a walking motion. The pontoons have longitudinally extending tunnels with flippers therein and have ballast tanks with buoyancy adjusting valves. The pontoons are formed with pitch dampeners thereon for improved stability and may also be provided with inertia reducers and improved propelling fins or flippers to increase the speed and distance travelled with the expenditure of a given amount of energy.

3,835,495
METHOD AND APPARATUS FOR SWAGING SCREW BLANK EXTREMITIES
Henry Anton Sygnator, Arlington Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Dec. 29, 1972, Ser. No. 319,279
Int. Cl. B21h *3/02*; **B23g** *9/00*
U.S. Cl. 10—10 R **15 Claims**



The present invention relates generally to improvements in methods and mechanisms for swaging the entering portion of a screw blank, and more specifically to novel methods and mechanisms for producing screw blanks having laterally offset, substantially conical entering or work swaging portions and a pilot extending therefrom. The invention as disclosed herein contemplates the use of a novel die arrangement wherein a first die section is provided with an openended cylindrical bore for telescopically accommodating a screw blank of corresponding size. An adjacently positioned second die section having a substantially conical bore is adapted to receive the entering extremity of a screw blank from the first die section. The substantially conical bore has a peripheral surface comprised of a pair of segments of conical surfaces each generated from axes which are offset or laterally displaced and one of these axes being coincident with the axis of the bore in the first die section. This second die section is positioned intermediate the first die section and a third die section having a pilot-forming bore the central axis of which is coincident with the bore of the first die section.

3,835,496
METHOD AND MACHINE FOR SHAPING THE HEEL OF A SHOE UPPER
Wilhelm Klein, Leiderbach/Ts, Germany, assignor to USM Corporation, Boston, Mass.
Filed Sept. 6, 1973, Ser. No. 394,785
Int. Cl. A43d *9/00*
U.S. Cl. 12—142 R **8 Claims**

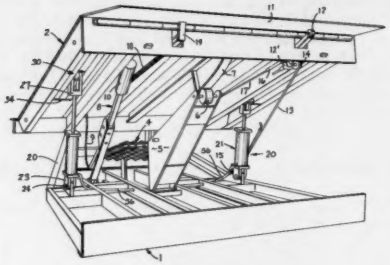


A method and machine is provided for shaping a shoe upper onto the last by activating and pressing the heel onto the last and then fastening the heel onto the insole. A revolving table is provided with a plurality of stations, the first of which aligns the upper onto the last, the subsequent stations providing for activation, pressing and fastening while the upper remains on the last.

3,835,497
DOCKBOARD SAFETY STOP
Vernon O. Smith, Ashley, Ohio, assignor to Overhead Door Corporation, Dallas, Tex.
Filed Jan. 22, 1973, Ser. No. 325,367
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 **21 Claims**

A dock leveler having a swingable ramp or deck positioned for engagement with a truck bed. The deck is freely swingable through a selected angle, both above and below a horizontal position, to accommodate and compensate for various bed heights. To prevent the deck from falling in the event a load is positioned on the deck and the truck pulls away from the deck, an improved safety stop device is positioned for coaction with the deck. The safety stop device, in a preferred embodiment of the invention, comprises a pair of closed and self-contained hydraulic stop cylinders positioned for engagement

with the opposite edges of the deck. The stop cylinders are load sensing and permit free swinging movement of the deck



under light loads, but positively prevent free swinging movement of the deck when same is heavily loaded.

3,835,498

CRAFT WASHING PLANT

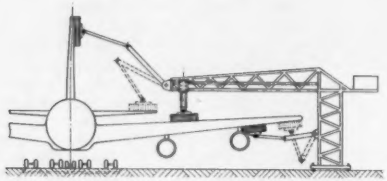
Laszlo Arato, Seebuchstrasse 19, Buochs, Switzerland (6374)

Filed July 12, 1973, Ser. No. 378,413

Claims priority, application Switzerland, July 14, 1972, 10635/72

Int. Cl. B64f 5/00

U.S. Cl. 15—21 E **10 Claims**



A washing plant for craft, particularly for aircraft or marine craft, comprises one or more cleaning assemblies each comprising one or more cleaning members and an articulated support for each of said cleaning members. Each support member is such as to allow each respective cleaning member to move in three orthogonal directions from any point of a predetermined space. The movement of each washing element is effected by a plurality of servomechanisms equal in number to the degrees of freedom of the corresponding articulated support, said servomechanisms being controlled by a device adapted to read a scale and/or mathematical model of the craft to be washed and to supply said servomechanisms with parameters corresponding to positions of the corresponding cleaning member on the surface of the craft to be washed.

3,835,499

WINDSHIELD WIPER

Klaus Bender, Esslingen (Neckar), Germany, assignor to Daimler-Benz A.G., Unterturkheim, Germany

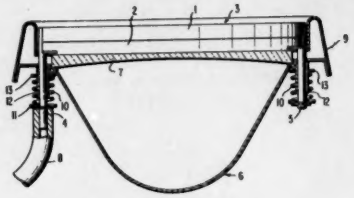
Filed Feb. 26, 1971, Ser. No. 119,257

Claims priority, application Germany, Feb. 28, 1970, 2009488

Int. Cl. B60s 1/52, 1/38

U.S. Cl. 15—250.04 **19 Claims**

A windshield wiper, particularly for the headlight glass panes of motor vehicles in which a wiper lamella consisting of a support part and of an elastic wiper blade arranged on the latter is constructed in such a manner as to be elastically bendable, preferably in a plane parallel to the surface to be



cleaned; the lamella assumes its normal rest position approximately within the area of the outer boundary of the surface to be cleaned at a projecting edge.

3,835,500

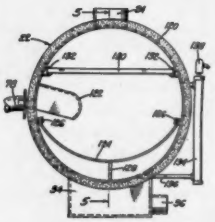
WATER REMOVAL MACHINE FOR ARTIFICIAL TURF

Frank J. Zamboni, Paramount, Calif., assignor to Frank J. Zamboni & Co., Paramount, Calif.

Division of Ser. No. 195,790, Nov. 4, 1971, Pat. No. 3,736,619. This application Jan. 29, 1973, Ser. No. 327,770

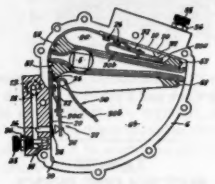
Int. Cl. A47l 5/00

U.S. Cl. 15—319 **2 Claims**



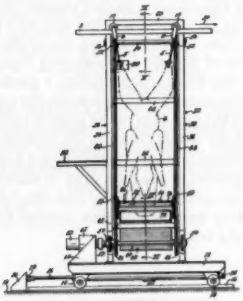
A machine for removing standing water from artifical turf, comprising an automotive vehicle carrying air and water pumps, air/water separation tank, nozzles, and associated equipment, and having a transverse water pick-up device including a roller that rolls on the turf and piles up a wave of water ahead of it. The roller is enclosed within a narrow, elongated housing having top, front and rear walls, and end plates. The bottom edge of the front wall just clears the turf and forms a narrow gap through which the piled up water flows into the housing ahead of the roller, where it is picked up by the vacuum suction and carried through a plurality of hoses to the tank. Here, the water is separated from the air and is pumped in a high-velocity jet to one side of the machine or the other, so that on successive passes over the turf, the machine moves all of the water to one side of the playing field where it can be drained off. The bottom edge of the rear housing wall extends slightly down into the turf and bends the pile forwardly, then releases it to flip droplets of water into the air behind the rear wall, where they are picked up by the air stream and carried through openings in the rear wall into the housing and thence through the hoses into the tank. An apron extends rearwardly from the rear wall, forming a confined space behind the housing, into which water droplets are flipped up by the turf. The trailing bottom edge of the apron rests lightly on the top of the turf, causing air to be sucked under the bottom edge of the apron and through the turf, to help pick up any remaining water.

3,835,501
ACTUATORS
Alan Richard Brine Nash, 39 Abbot's Ride, Farnham, England
Filed June 28, 1972, Ser. No. 267,176
Claims priority, application Great Britain, July 2, 1971, 31187/71
Int. Cl. E05f 3/04
U.S. Cl. 16—51 **10 Claims**



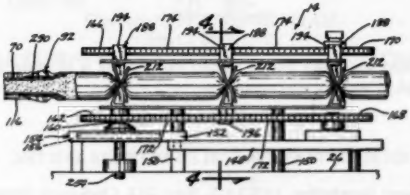
A pressure-fluid operated actuator used, e.g. as a door opening and closing mechanism has restriction means limiting the flow of pressure fluid and so slowing down the rate of movement towards the end of a closing movement. The restriction means do not affect the initial part of the movement and allow free entry of fluid into the actuator for the reverse movement. The arrangement can include means which limit the degree of restriction offered.

3,835,502
HIDE PULLING MACHINE
Phil W. Thompson, 13307 Spring St.; Ralph F. Thompson, 11919 Bennington, both of Grandview, Mo. 64030, and Harold G. Gottreu, 7109 Willlow, Raytown, Mo. 64133
Filed Mar. 2, 1973, Ser. No. 337,634
Int. Cl. A22b 5/16
U.S. Cl. 17—21 **6 Claims**



A hide pulling machine for hogs consisting of a carriage movable on tracks beneath and parallel to a conveyor line along which hogs are moved, the hogs being suspended in a head-down position and having the hide previously pulled loose from the head, legs and belly, the carriage having mounted thereon a power operated pulling device moving downwardly adjacent the hog, and including a clamping device to which a loose portion of the hide may be affixed, so that the hide is pulled free of the back and sides of the animal in a downward direction. The clamping device is automatically released when the pulling is completed, and the hide is deposited in a discharge chute. The carriage travel on its rails may be synchronized with the conveyor travel, so that no interruption of the conveyor travel is necessary.

3,835,503
APPARATUS FOR ENCASING A PRODUCT
Ray T. Townsend, and Donald L. Beasley, both of Des Moines, Iowa, assignors to Townsend Engineering Company, Des Moines, Iowa
Filed Dec. 14, 1972, Ser. No. 315,223
Int. Cl. A22c 11/02
U.S. Cl. 17—35 **16 Claims**

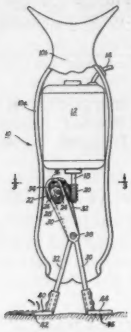


An apparatus for encasing a product including a product encasing machine, linking apparatus, and a looping apparatus. The product encasing machine includes a rotatable stuffing tube having a fin head mounted on its forward end. The fin head imparts rotational drive and longitudinal drag to the casing as the casing passes thereover as the casing is being filled. The rearward end of the stuffing tube is mounted in a socket type apparatus to permit the stuffing tube to be pivotally moved upwardly and laterally to facilitate the installation of the folded casing thereon. A modified means of supporting the discharge end of the stuffing tube is also disclosed comprising a split bearing member which embraces the rotating fin head and casing. The bearing member may be selectively opened to permit the stuffing tube to be pivotally raised to its loading position. The bearing member is spring loaded to permit different dragging forces to be selectively applied to the casing. Means is also provided for fluidly lubricating the interior surfaces of the stuffing tube to prevent product smear. The linking apparatus includes a pair of loop members carrying pinching members thereon. The pinching members are constructed of a moldable material and are detachably mounted on the loop members. The pinching members include pinching surfaces adapted to engage and collapse the rotating casing issuing from the encasing machine. The pinching surfaces each include at least one portion in vertical alignment with the longitudinal center line of the loop on which it is carried so that it will travel at a uniform velocity as it is carried by the loop members. A separate control means is provided for the rotation stuffing tube to permit the stuffing tube to be separately controlled as to speed independent of all other drives.

3,835,504
ELECTRIC FISH SCALER
Theodore Tripodi, 5 East St., Riverhead, N.Y. 11901
Filed June 14, 1973, Ser. No. 370,174
Int. Cl. A22c 25/02
U.S. Cl. 17—66 **2 Claims**

An electric fish scaler having a pair of fulcrum type arms with a slotted cam follower surface at one end being actuated

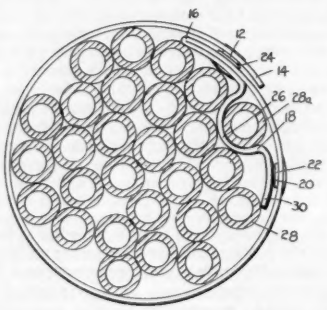
by an eccentric cam. One arm carries a scale removing blade at its free end. The second arm is similarly actuated for stabilizing the scaler during cutting and causing it to move in steps between cutting operations.



3,835,505
BINDING STRAP FOR COILED ARTICLES AND THE LIKE

George Shewbridge, 10701 S.E. Hwy. 212, Clackamas, Oreg. 97222

Filed Jan. 26, 1973, Ser. No. 326,982
Int. Cl. B65d *63/00*
U.S. Cl. 24—16 R **2 Claims**



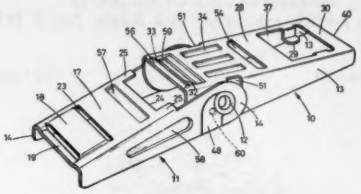
A strap having a main body portion arranged to be wrapped around a coiled cord or the like and having fastening means at opposite ends for binding engagement around the cord. One end of the main body portion has an auxiliary body portion adapted to be secured to one end of the cord to hold such end in a fixed position in the coil.

3,835,506
BUCKLE FOR PACKAGING STRAPS

Harald Berns, Wuppertal-Elberfeld, Germany, assignor to Herkert Schlbach KG, Wuppertal, Germany

Filed June 22, 1973, Ser. No. 372,636
Claims priority, application Germany, June 27, 1972, 2231324
Int. Cl. A44b *11/25;* **A43c** *11/00*
U.S. Cl. 24—68 D **9 Claims**

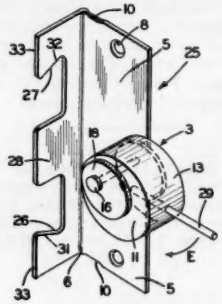
A first component to which one end of a packaging strap is to be connected, is connected with a second component to which the other end of the strap is to be connected, the connecting arrangement permitting both pivotal displacement of the components relative to one another, and also relative longitudinal movement of the components between a position in which the strap is slack and a position in which the strap is tensioned.



3,835,507
ROPE HOLDING DEVICE

John O. Richards, 980 Mill Cir., Alliance, Ohio 44601

Filed May 3, 1973, Ser. No. 356,849
Int. Cl. F16g *11/10*
U.S. Cl. 24—134 R **4 Claims**



A rope holding device having a resilient cylindrical-shaped cam mounted on a generally L-shaped bracket. A pair of discs is mounted on the circular ends of the cam by a pin. The pin eccentrically mounts the cam on one leg of the bracket for pivotal movement of the cam into clamping engagement with the other leg of the bracket for gripping a portion of a rope therebetween. The rope forms a groove in the cylindrical engaging surface of the cam preventing sideways disengagement of the rope, and the compression of the resilient cam by the rope maintains constant pressure on the rope preventing premature disengagement of the rope from its clamped position. A rod may extend radially outwardly from the cylindrical cam surface for locking engagement with notches formed in the clamping leg of the bracket.

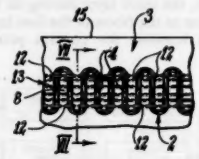
3,835,508
CONNECTING MEANS

Rodney James Bini, Rosanna, Australia, assignor to George Norman & Co. Pty. Ltd., Clifton Hill, Victoria, Australia

Filed Dec. 4, 1972, Ser. No. 312,105
Claims priority, application Australia, Dec. 10, 1971, 7342/71
Int. Cl. A44b *17/00*
U.S. Cl. 24—204 **10 Claims**

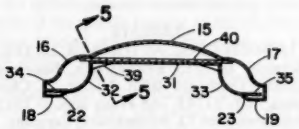
Connecting means for releasably attaching a sheet-like member to a support, and including a thread attached to a sheet-like member so as to have sections thereof exposed on one surface of that member. The thread sections are arranged so as to tangle with or locate within flexible hook-like ele-

ments such as those used in the well known "Velcro" fasteners. Cooperative engagement between the "Velcro" hooks and the thread sections is facilitated by having the thread sections extending transversely across a valley formed



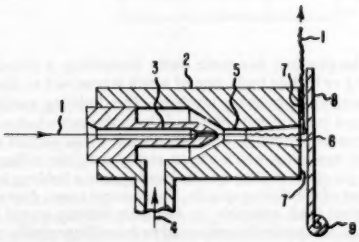
by a tuck or fold in the sheet-like member, and a tensioning thread is applied to that member to retain the tuck or fold and permit the thread sections to extend relatively loosely across the valley in the sheet-like member.

3,835,509
CASKET LID
Richard B. Esterdahl, P.O. Box 16BB, Prophetstown, Ill. 61277
Filed Jan. 31, 1973, Ser. No. 328,270
Int. Cl. A61g *17/00*
U.S. Cl. 27—19 **12 Claims**



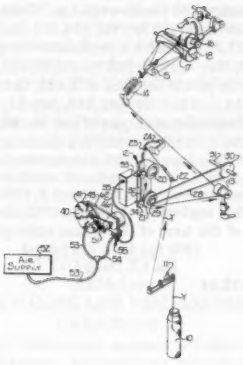
A liner assembly for a casket lid of the type having a crown portion and laterally extending flanges extending from edges of the crown portion, the liner assembly being composed in part of a flat plate that lies inside of the casket lid in spaced-apart relation from the flanges, and a resilient liner bearing against the underside of the plate and having laterally extending edges engaging the flanges of the lid. The liner has a depth when in repose that is greater than the vertical distance between the lower surface of the plate and the horizontal flanges so that the liner is held in place.

3,835,510
BAFFLE FOR TEXTURING JET AND METHOD
Manfred Gunter Koslowski, Geneva, Switzerland, assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 15, 1972, Ser. No. 315,563
Int. Cl. D02g *1/16*
U.S. Cl. 28—1.4 **5 Claims**



A method and apparatus to automatically adjust baffle setting for variations in processing conditions when using a yarn treating fluid jet having a baffle adjacent its outlet end. The baffle is mounted for free movement toward and away from the outlet end of the jet and defines with the adjacent outlet end surface of the jet a mutually shared area greater than the cross-sectional area of the exit of the treatment channel of the jet. The baffle is mounted at a position of equilibrium with respect to the fluid flow rate from the jet and can automatically adjust for minor changes in flow rate to maintain uniform operability.

3,835,511
PROGRAMMER FOR AIR JET TEXTURING APPARATUS
Victor H. Schrader, Wilmington; Richard J. Polney, New Castle, and Peter W. Vermilyea, Newark, all of Del., assignors to Enterprise Machine and Development Corporation, New Castle, Del.
Filed Apr. 9, 1973, Ser. No. 349,425
Int. Cl. D02g *1/16*
U.S. Cl. 28—1.4 **14 Claims**

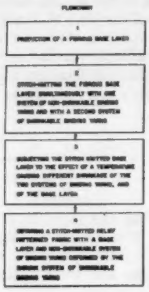


The present programmer operates to produce variations in the bulkiness along the length of air jet textured yarns by producing an irregular pattern of impulses which does not repeat for a long length of time. The programmer includes a rotatable pattern wheel having depressions in the form of substantially radially extending grooves of irregular width and configuration on one face thereof. An air nozzle sensor is supported for movement in a generally radial direction of the pattern wheel to "read" the grooves as the pattern wheel rotates and to thereby produce periods of reduced air pressure in the system. An air pressure switch is operated by these reductions in the air pressure to cause the air jet texturing unit to form irregularly spaced slubs along the length of the yarn.

3,835,512
METHOD OF PRODUCING RELIEF PATTERNED NONWOVEN TEXTILES
Bohumil Piller, Brno; Vladimir Lacko, Svit; Zdenek Kochta, Brno, and Bedrich Koudelka, Horakov, all of Czechoslovakia, assignors to Vyzkumny Ustav Pletarsky, Brno, Czechoslovakia
Filed Dec. 8, 1969, Ser. No. 882,967
Int. Cl. D03d *11/08*; **D06c** *23/00*
U.S. Cl. 28—72 FT **8 Claims**

A base layer of fibers or yarns is mechanically reinforced by binding yarns including two different yarns having a different

and higher shrinkage coefficients than the base layer. When



the fabric is shrunk, a relief pattern is produced due to the different shrinkage of the respective yarns and the base layer.

3,835,513

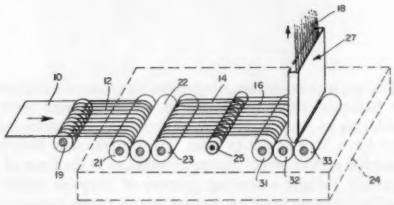
DRAW CRIMPING TEXTILE FILM STRANDS

Robert K. Stanley, 630 Meadowvale Ln., Media, Pa. 19063

Continuation-in-part of Ser. No. 124,213, March 15, 1971, Pat. No. 3,753,275, which is a continuation-in-part of Ser. No. 822,429, May 7, 1969, Pat. No. 3,570,083, which is a continuation-in-part of Ser. Nos. 678,428, Oct. 26, 1967, Pat. No. 3,462,814, and Ser. No. 302,758, July 31, 1963, Pat. No. 3,376,622, Continuation-in-part of Ser. No. 846,457, July 31, 1969, Pat. No. 3,781,952, which is a continuation-in-part of Ser. No. 835,883, June 9, 1969, Continuation-in-part of Ser. No. 650,762, July 3, 1967, abandoned, which is a continuation-in-part of Ser. No. 349,338, March 8, 1964, Pat. No. 3,348,283. This application Feb. 28, 1973, Ser. No. 336,617. The portion of the term of this patent subsequent to Aug. 21, 1990 has been disclaimed

Int. Cl. D02g *1/12*

U.S. Cl. 28—72.14 **7 Claims**



Drawable textile film strands are treated by drawing the same to increased length and compressively crimping the drawn material, both steps being carried out in essentially continuous manner with a minimum of time and space therebetween.

3,835,514

METHOD OF MAKING LAMINATED DIFFUSION BONDED BATTERY PLAQUES

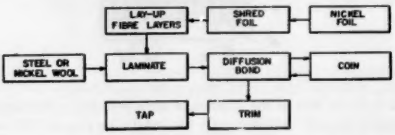
William Pollack, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 143,770, May 17, 1971, abandoned. This application Sept. 18, 1973, Ser. No. 398,349

Int. Cl. B23p *13/00*

U.S. Cl. 29—2 **10 Claims**

A laminated, flexible metal fiber electrode plaque is made by (1) providing a first layer of substantially parallel metallic fibers having lengths greater than about 4 inches, (2) placing a second layer of substantially parallel metallic fibers having lengths greater than about 4 inches on top of and contacting the first layer, the second layer having its fibers oriented between 30° and 90° from the fibers of the first layer, (3) placing a third layer of substantially parallel metallic fibers having lengths greater than about 4 inches on top of and contacting the second layer, the third layer having its fibers oriented in the same direction as the fibers of the first layer, (4) metallurgically diffusion bonding the contact points of the fibers



between the layers together, to provide, annealed, bonded plaques and bus connectors, (5) coining the annealed, bonded plaque to provide a plaque having a body portion of between 70 and 97 percent porosity and a bus connector portion of up to 70 percent porosity, by pressing the bus connectors into contact with predetermined areas of the plaque and then (6) metallurgically bonding the contact points of the plaque and bus connectors together.

3,835,515

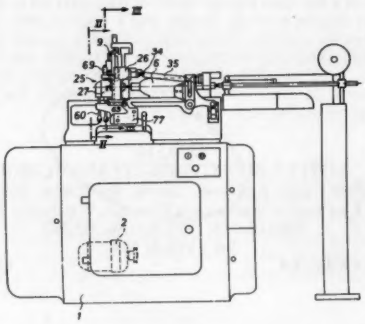
LONGITUDINAL AUTOMATIC LATHE

Gunter Kersten, D 7313 Reichenbach, Blumenstrabe 35, Reichenbach, Germany; Rudi Muller, 3 Charles Ave., Huntington, N.Y. 11743, and Franz Ray, D 7313 Reichenbach, Hermannstrabe 12, Reichenbach, Germany

Filed Sept. 8, 1972, Ser. No. 287,214

Int. Cl. B23b *7/06, 11/00*

U.S. Cl. 29—27 C **10 Claims**



A longitudinal automatic lathe comprising a plurality of turning or cutting tools, one of which is removed to allow the inclusion of a hobbing machine. This hobbing machine is disposed in the vicinity of a guide bush through which a workpiece to be machined is advanced and forms part of a hob-milling apparatus which has an axially movable milling spindle, a pivotable milling spindle housing, and a hobbing head at the end of the milling spindle. Two control cams, disposed on a control shaft rotatable by the main driving motor of the lathe, are respectively connected to the milling spindle and the spindle housing to move the milling spindle axially and pivot the spindle housing allowing high quality toothing to be achieved by accurately maneuvering the hobbing head at the milling spindle end into contact with the workpiece.

3,835,516

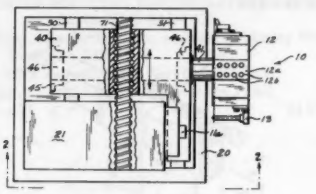
MACHINE TOOL WITH INDEXIBLE TOOL SUPPORT

Baxter T. Fullerton, Cleveland, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 148,729, June 1, 1971, abandoned. This application Sept. 28, 1972, Ser. No. 292,982

Int. Cl. B23b *3/18*

U.S. Cl. 29—47 17 Claims



A machine tool comprising a headstock having a rotatable spindle for supporting and rotating a workpiece. A turret mounted on the headstock and offset to one side of the spindle carries tools to work upon a workpiece in the spindle. Bearing means offset to one side of the spindle supports the turret for indexing movement about and feed movement along an axis parallel to the spindle axis and second bearing means extending to one side of the spindle housing on the machine bed supports the first bearing means and the turret for movement toward and away from the spindle axis. The bed of the machine does not project substantially beyond the spindle housing in the direction of the spindle axis and the turret projects outwardly of the bed. The turret is movable along the axis of rotation thereof a variable distance depending upon the work to be performed.

3,835,517

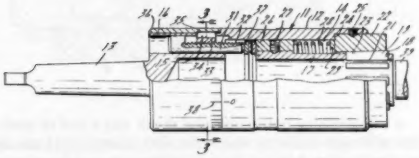
BURNISHING TOOLS FOR INTERIOR AND EXTERIOR SURFACES

William D. Walters, Pontiac, Mich., assignor to Cogsdill Tool Products, Inc., Farmington, Mich.

Filed Oct. 19, 1973, Ser. No. 408,165

Int. Cl. B24b *39/00*

U.S. Cl. 29—90 10 Claims



Burnishing tools for finishing the inside or outside surface of a cylindrical workpiece to a high polish has a unique adjustment for changing the diameter of the annular plane of the rollers so as to change the diameter of the finished surface of the workpiece. This embodies the use of three pins against the ends of which the cage for the rollers is urged by a spring, the pins being positioned by a nut having an internal thread in engagement with the external thread sections on the facing side of the pins. An outer collar is fixed to the nut, the turning of which rotates the nut and advances or retracts the pins.

3,835,518

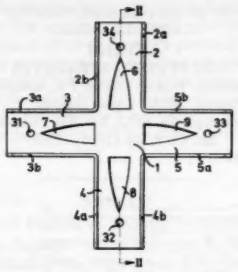
METHOD OF MANUFACTURING A FITTING USING A PUNCH AND DIE

Bjarne Jorgensen, Kirkebjerg Alle 6, 2720 Vanlose, Denmark

Filed Mar. 29, 1972, Ser. No. 239,148

Int. Cl. B23p *13/00*

U.S. Cl. 29—150 3 Claims



A fitting, preferably for the assembling of a box shaped assembly, which fitting has a central panel and two or more finger portions extending from said central panel. The flange portions of each of the longitudinal edges of said finger portions being bent substantially at right angles to the associated finger portions so that each of said finger portions together with the bent flange portions form a U-shaped channel which is adapted to accomodate an edge portion of a constructional board. The bending of the flange portions being carried out by a special stamping method in such a manner that each flange portion is not only integral with the associated finger portion but is also integral with the adjacent finger portion without the corners between such adjacent bent flange portions of adjacent finger portions being torn up so that particular rigid fittings are obtained.

3,835,519

METHOD OF MAKING LOW FRICTION MINIATURE GEAR DRIVE

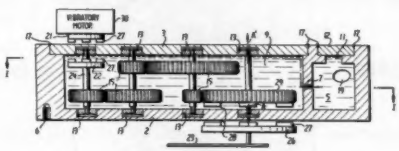
Max Hetzel, Biel, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services SA, Bienne, Switzerland

Division of Ser. No. 322,381, Jan. 10, 1973, Pat. No. 3,792,578. This application Nov. 6, 1973, Ser. No. 413,241

Claims priority, application Switzerland, Feb. 28, 1972, 2806/72

Int. Cl. B23p *13/00*

U.S. Cl. 29—177 5 Claims



A miniature gear drive, such as that used in clockworks, is disposed in one chamber of a housing having two chambers interconnected by a capillary channel. The chamber containing the gears is sealed except for the channel, and the entire assembly immersed in a lubricant liquid within a vacuum chamber. The vacuum chamber is evacuated and then the vacuum removed so that the lubricant completely fills both chambers of the housing. The assembly is removed from the vacuum chamber and heated whereby the liquid expands and a portion of the liquid escapes through an opening in the

second housing chamber. The assembly is then cooled so that an air bubble is formed in the second housing chamber, and the second chamber is then sealed. The input power to the gear drive, and the output power therefrom are obtained by magnetic coupling through the housing. The air bubble permits expansion of the liquid within the housing due to temperature changes, but the capillary channel prevents this bubble from reaching the chamber containing the gear drive hence the gears are always completely immersed in the liquid.

3,835,520

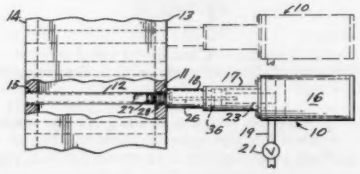
TUBE PULLING APPARATUS

William W. Sismore, Willow Grove, Pa., assignor to Richard T. Harris, Monroe, Mich., a part interest

Filed Sept. 10, 1973, Ser. No. 396,054

Int. Cl. B23p *15/26, 19/02*

U.S. Cl. 29—202 D **8 Claims**



The invention is a tube pulling apparatus capable of removing a tube from a pair of tube sheets of a tube-in-shell heat exchanger. A hydraulic cylinder retracts a pull rod which expands a set of gripping jaws against the interior of a tube in a tube sheet. The pull rod then continues to retract while a standoff collar braces the apparatus against the tube sheet. Sufficient force is developed to overcome the hoop stresses of the tube in the tube sheet, and the stressed tube portion is pulled free of the tube sheet without damage to the tube sheet.

3,835,521

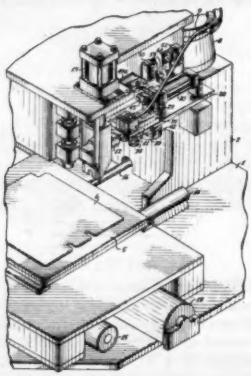
GRAVITY-FED SELECTABLE PIN INSERTION DEVICE

Robert O. Crump, Scottsdale, and Karl R. Bethsold, Phoenix, both of Ariz., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Sept. 4, 1973, Ser. No. 393,870

Int. Cl. H05k *13/04*

U.S. Cl. 29—203 B **4 Claims**



A pin insertion device which uses gravity to feed pins into a hopper employs a plurality of partitions to align the pins with a plurality of ports in one wall of the hopper. The pins are held in alignment by the ports and by grooves in the bottom of the hopper. A plurality of pushers may be selectively activated to move selected pins through the ports into boards or other receivers which are positioned adjacent the ports.

3,835,522

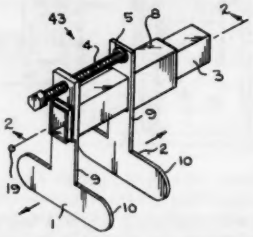
DISC BRAKE SPREADER

Marvin T. Ward, 918 Cohn St., Houston, Tex. 77007

Filed Jan. 12, 1973, Ser. No. 322,979

Int. Cl. B23p *19/04*

U.S. Cl. 29—239 **3 Claims**



The disc brake spreader is a piston retraction tool consisting basically of a pair of thin-plate jaws, shaped esentially like disc brake shoes, with one jaw fixed to a guide rod and the other jaw slidably mounted on the guide rod. The jaws each include an upwardly projecting portion through which they are connected by an expansion screw threaded through the immovable jaw and extending parallel to the axis of the guide rod. One end of the screw is journaled in the slidable jaw and secured thereto by a retainer which permits the jaws to move inwardly or outwardly by turning the screw.

3,835,523

SELF-STRAINING BOLTS

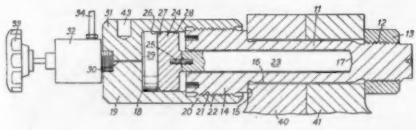
Fred Stansfield, Oldham, England, assignor to P & O Research & Development Company Limited, London, England

Filed Mar. 6, 1973, Ser. No. 338,425

Claims priority, application Great Britain, Mar. 8, 1972, 10727/72

Int. Cl. B23p *11/02*

U.S. Cl. 29—252 **9 Claims**



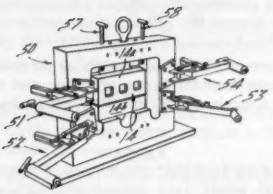
A self-straining bolt includes a shank and a rod of steel or like stiff rigid material which fits with clearance in an axial bore within the shank of the bolt, the bore being closed at one end. A closed cylindrical chamber is secured to the end of the bolt remote from the closed end of the bore, and a piston member which has an overall diameter greater than that of the bore, is fitted in the chamber. The piston member is a close sliding fit in the cylindrical chamber and engages the end of the rod adjacent the chamber. A disc of a resilient material with a hardness in the range of Shore hardness 10 to 100, and preferably 40 to 70, and a thickness of at least ⅜ inch, and preferably at least ½ inch, abut the working face of the piston and bears with its periphery against the cylindrical wall of the chamber so as to form a seal. A conduit extends through the wall of the chamber for connecting the chamber to a source of

fluid under pressure whereby a pressure can be applied to the piston through the disc to cause the rod to press against the closed end of the bore and strain the shank of the bolt. The disc prevents fluid leaking from the chamber through the space between the piston and the cylindrical wall of the chamber.

3,835,524
METHOD OF MANUFACTURING REJUVENATED SCARFING BLOCKS

John M. Massey, Dearborn, Mich., assignor to Massey Welding Company, Dearborn, Mich.

Filed Aug. 13, 1973, Ser. No. 387,763
Int. Cl. 29 *501*; **B23p** *7/00*; **B23k** *31/02*
U.S. Cl. 29—401 **21 Claims**

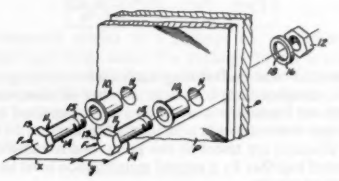


A new method for manufacturing rejuvenated scarfing blocks which are used for scarfing (i.e., the heat cleaning or thermochemical conditioning of) the surfaces of steel slabs in steel mills.

3,835,525
METHOD OF FABRICATING A JOINT

John O. King, Jr., 3990 N. Ivy Rd., Atlanta, Ga. 30342

Continuation-in-part of Ser. Nos. 33,281, April 30, 1970, , and Ser. No. 882,126, Dec. 4, 1969, , which is a continuation-in-part of Ser. No. 711,368, March 7, 1968, abandoned. This application July 3, 1972, Ser. No. 268,477
Int. Cl. B23p *17/00*
U.S. Cl. 29—412 **9 Claims**



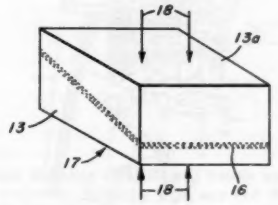
Method for forming a fastener joint in which the effective diameter of high strength fasteners utilized particularly in aerospace and marine standards is precisely enlarged, for preventing corrosive chemical reactions between the work pieces and the fastener, and for preventing fretting between composite materials and the fasteners. The method includes the steps of encircling the shank of the fastener with a metal member of a predetermined thickness so that the member is in close tolerance bearing contact with the shank of the fastener and will be in bearing contact with the aligned holes through the work pieces when the fastener is in position; and seating the member encircling the shank of the fastener by tightening the fastener against the work pieces. The metal member may be a material that is not chemically reactive with the work pieces to be fastened together to prevent the fastener from chemically reacting with the work pieces.

When the sleeve member of the invention is installed, its outside surface or the inside surface of the holes may be coated with an adhesive sealant before it is inserted into the holes so that the sleeve member is bonded to the holes and the fastener can be installed and removed without removing the sleeve member. When it is desirable that the work pieces of a joint be capable of separation, the sleeve member of the invention can be first severed to a length corresponding to the combined thickness of all of the work pieces of the joint and then the thusly severed sleeve member subdivided into segments corresponding to the individual thickness of each of the work pieces of the joint. When the subdivided sleeve member is installed in the corresponding work pieces, the joint may be subsequently separated even if the sleeve member is bonded to the work piece.

3,835,526
METHOD OF FORMING TAPERED METAL PIECES

Louis J. Bartlo, Youngstown, and Howard B. Bomberger, Jr., Canfield, both of Ohio, assignors to RMI Company, Niles, Ohio

Continuation-in-part of Ser. No. 112,160, Feb. 3, 1971, abandoned. This application Apr. 9, 1973, Ser. No. 349,586
Int. Cl. B23k *1/20*
U.S. Cl. 29—470.9 **4 Claims**

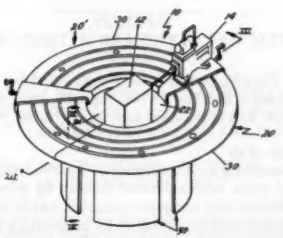


A method of forming tapered metal pieces particularly applicable to titanium. A block of the metal of uniform thickness is sawed or otherwise cut to form two wedge-shaped segments. The cut surfaces of the segments are coated with a parting compound and placed against each other. The segments are joined with a weld which extends around their abutting edges, forming a pack of uniform thickness. The pack is forged to dimensions such that it can be carried on a roller conveyor, and hot worked, after which the segments are separated.

3,835,527
MULTI-PURPOSE SUPPORT APPARATUS

Russell J. Cornair, 1083 Rolling Meadows Dr., Akron, Ohio 44313

Filed Sept. 29, 1972, Ser. No. 293,310
Int. Cl. B23p *23/00*
U.S. Cl. 29—560 **9 Claims**



A universal, multi-purpose support table for simultaneously supporting a work piece and at least one power or other tool at

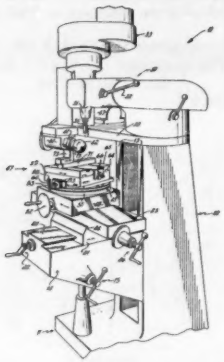
various horizontal and vertical positions with respect to the work piece. The table includes a top having an opening beneath which is supported a work support pan. The table top is formed from two segments, and supported by support legs, the top segments being selectively mountable in either a horizontal plane or with one mounted horizontally with the other supported vertically therefrom. Saddle-type brackets are included for removably mounting a tool radially across either the vertically or horizontally mounted top segments.

3,835,528

SPHERE AND ANGLE TURNING ATTACHMENT FOR MILLING MACHINES

Wayne O. Garrett, Amelia, Ohio, assignor to Hansco, Inc., Cincinnati, Ohio

Filed Sept. 10, 1973, Ser. No. 395,957
Int. Cl. B23p *23/02*
U.S. Cl. 29—560 **13 Claims**



Machinery for cutting spherical and other surfaces of revolution on a workpiece while the latter is rotated about its longitudinal axis. The cutting tool is carried by a tool post mounted on a table which is both positionable along X-Y axes in its plane and swingable about an axis perpendicular to the axis of the workpiece. This table is in turn carried by another table which is independently shiftable so that the axis of tool swinging movement may be shifted with respect to the axis of workpiece rotation.

A post or spindle is provided for rapid set-up of the tool with respect to the axis about which it is swung, the post being shiftable along an axis perpendicular to the surface of the table on which the tool is carried, between a position at which it is remote from the tool, and a set-up position in which its side surface can be engaged by the cutting edge for accurate positioning of the latter.

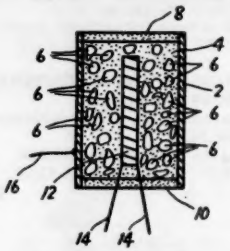
3,835,529

GAS DETECTING DEVICE AND METHOD OF MAKING SAME

Naoyoshi Taguchi, 6-3-2 chome, Hyuga Tauai-ku, Kobe, Japan

Division of Ser. No. 74,749, Sept. 23, 1970, Pat. No. 3,732,519. This application Apr. 24, 1972, Ser. No. 246,606
Int. Cl. B01j *17/00*
U.S. Cl. 29—570 **3 Claims**

A gas detecting device formed of a porous, highly permeable, metal oxide semiconductor formed by mixing semiconductor particles with inorganic materials which will render the semiconductor highly porous or by intermixing the semiconductor with materials which can be evaporated or otherwise removed by heating to a temperature below the sintering temperature of the semiconductor. The resultant semiconductor material is contained within a suitable housing that will permit gases to flow readily through the semiconductor and appropriate electrodes are affixed to the semiconductor to measure a change in resistance in the presence of reducing gases.



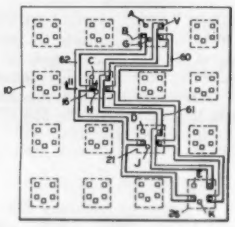
Heating means may be utilized to stabilize the resistance of the semiconductor material during operation and such heating means may comprise at least one of the electrodes.

3,835,530

METHOD OF MAKING SEMICONDUCTOR DEVICES

Jack S. Kilby, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 645,539, June 5, 1967, Pat. No. 3,643,232, which is a continuation of Ser. No. 420,031, Dec. 21, 1964, abandoned. This application Sept. 22, 1971, Ser. No. 182,875
Int. Cl. B01j *17/00*
U.S. Cl. 29—574 **20 Claims**



A method of manufacturing semiconductor integrated circuits in complex arrays. A large number of electronic components are formed on a wafer and interconnected to define functional elements using a first metallization level. The functional elements are tested at this point, and selected ones are connected together by a second metallization level to provide the desired system.

3,835,531

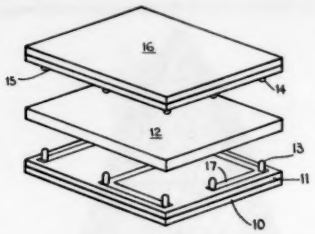
METHODS OF FORMING CIRCUIT INTERCONNECTIONS

Willem Luttmer, Romiley, England, assignor to International Computers Limited, London, England

Filed June 8, 1972, Ser. No. 263,347
Claims priority, application Great Britain, June 10, 1971, 27362/71
Int. Cl. H05k *3/36*
U.S. Cl. 29—625 **6 Claims**

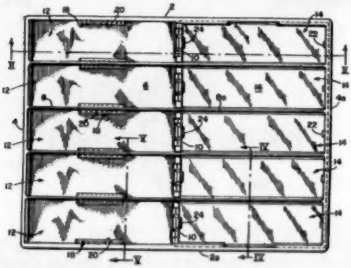
A method of forming circuit interconnections between adjacent circuits of a multilayer circuit structure is described in which corresponding sets of solder protrusions carried on conductive tracks of adjacent circuits are separated by a layer of uncured, heat-curable insulating material having a transient state, in which the material becomes deformable, between the uncured and the cured states. The layer is heated and the cir-

cuits are urged towards one another during the transient, deformable state of the material so that the protrusions pierce



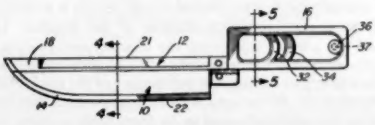
the layer, corresponding protrusions contacting one another and the heat subsequently causing the material to become cured. Finally, the contacting protrusions are fused together.

3,835,532
PACKAGE FOR RAZOR BLADE UNIT
Richard J. Petrillo, Norwell, Mass., assignor to The Gillette Company, Boston, Mass.
Continuation-in-part of Ser. No. 124,304, March 15, 1971, abandoned. This application Dec. 27, 1971, Ser. No. 212,352
Int. Cl. B26b *21/24;* **A45d** *27/24*
U.S. Cl. 30—40.2 **14 Claims**



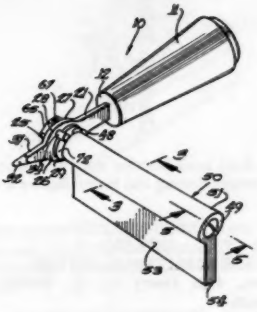
This invention relates to a package for containing and dispensing razor blade units. The package further is adapted to receive a razor handle for use with the blade units in such manner as to facilitate connection of the handle to a blade unit. The package is further adapted to facilitate interchange of blade units on the handle, and finally, to act as a repository for used blade units.

3,835,533
COMBINATION KNIFE & SHEAR
Peter R. Granson, 72 Ashford St., Allston, Mass. 02139
Filed Apr. 3, 1973, Ser. No. 347,368
Int. Cl. B26b *11/00*
U.S. Cl. 30—146 **11 Claims**



The implement basically comprises a pair of blade members that may be interlocked in a first position to form a knife, and that may alternatively be joined by a pivot pin to form a scissors or shear.

3,835,534
IVKO SCRAPER
Joseph J. Ivko, 1644 Magellan Dr., Sarasota, Fla. 33580
Filed Nov. 8, 1973, Ser. No. 413,872
Int. Cl. B26b *11/00;* **A47l** *13/08*
U.S. Cl. 30—169 **6 Claims**

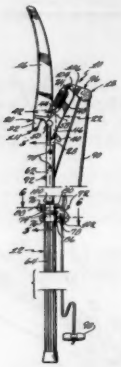


A scraper including an elongated handle having a shank member projecting forwardly from one end thereof with a guide head formed integrally with the forward end of the shank member, the guide member of flat stock material defining flat transversely spaced front and back surfaces with curved top and bottom edges, the forwardly projecting end portion of the guide head having a tapered forwardly extending pointed member formed integrally therewith, an opening disposed centrally of the guide head and extending transversely therethrough, a pair of diametrically spaced apart pin stop members each spaced on an opposite side of the guide head opening and projecting outwardly from the front surface of the guide head, a scraping blade member adapted for detachable mounting to the guide head by use of the opening and adapted for rotation about its axis within the limits prescribed by the stop members, and a bolt adapted for securing the blade member pivotally to the guide head to permit pivotal movement of the blade thereabout when operating the scraper in a back and forth manner to clean the edges of concrete forms.

3,835,535
POLE PRUNER WITH IMPROVED CUTTING HEAD
James W. Robison, Belpre, Ohio, and Harold O. Eads, Parkersburg, W. Va., assignors to McDonough Co., Parkersburg, W. Va.
Filed Aug. 20, 1973, Ser. No. 389,548
Int. Cl. B26b *13/06, 13/22*
U.S. Cl. 30—249 **15 Claims**

A pole pruner having a cutting head of the single anvil type in which the cutting blade is formed of a relatively thin blade structure having an essentially single bevel construction with a non-symmetrical straight cutting edge, the cutting blade being

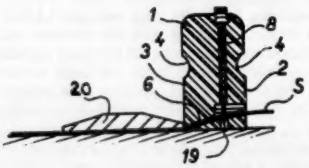
arranged with respect to the fixed anvil member shape and location so that the free end of the cutting blade is slidably supported by the fixed anvil member during the portion of the cutting stroke where binding and lateral flexure is most likely to occur.



3,835,536
SHEET MATERIAL CUTTER

Emery Marcoux, 445a Fleury St., E., Michel, Montreal, Quebec, Canada

Filed Jan. 31, 1973, Ser. No. 328,342
Int. Cl. B26b *29/00*
U.S. Cl. 30—294 9 Claims



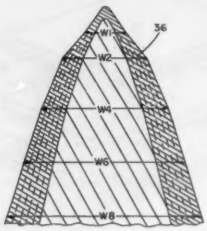
A cutter for sheets of paper or other material adapted to cooperate with a ruler of any usual type to produce straight lines cuts and including a slot for the passage of the sheet of material therethrough, the sheet passage slot is arranged to allow unhampered travel of sheet material of different thicknesses therethrough and to oppose the formation of folds into the material. The sheet passage slot enters into the body of the cutter through the bottom face and a side face thereof adjacent a straight edge of the same, such as to prevent hinderance of the sheet material between the guide or ruler and the straight edge of the cutter and also between the cutter and the support surface. In a preferred embodiment, the cutter is arranged to cut by displacement in either of two opposite longitudinal directions and to be guided by engagement of either of the two opposite sides with a ruler.

3,835,537
IMPROVED CUTTING TOOL

Aiyaswami S. Sastri, Stow, Mass., assignor to The Gillette Company, Boston, Mass.

Division of Ser. No. 161,158, July 9, 1971, Pat. No. 3,761,372.
This application Mar. 19, 1973, Ser. No. 342,755
Int. Cl. B26b *21/54*
U.S. Cl. 30—346.53 4 Claims

The sharpened edge of a cutting implement such as a razor blade is modified by subjecting the cutting edge to ion bombardment and strengthening material deposition steps so that a portion of the deposited strengthening material is removed, the cutting edge of the implement having a resulting tip radius

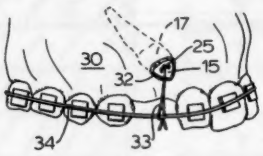


of less than about 400 Angstroms and added strengthening material on the flanks so that at a distance of 6,000 Angstroms from the tip the added material has a total thickness of at least about 400 Angstroms.

3,835,538
ORTHODONTIC ONLAY AND METHOD FOR EXERTING CORRECTIVE TRACTION ON AN IMPACTED TOOTH

Michael E. Northcutt, 12720 Dianne Dr., Los Altos Hills, Calif. 94021

Filed May 8, 1972, Ser. No. 250,959
Int. Cl. A61c *3/10*
U.S. Cl. 32—14 E 17 Claims



An orthodontic onlay which is cemented directly to an impacted tooth to aid in exerting corrective traction thereon. A curved base surface has a curvature substantially the same as an incisal portion of the tooth involved. The onlay has a series of openings or recesses leading from that surface toward the opposite surface for receiving and holding cement, thereby increasing the bond between the tooth and the onlay when the cement is applied. Bonding strength is increased further by plasma processing the surface, especially when the onlay is made from plastic. On its opposite surface the onlay has means for attaching a ligature.

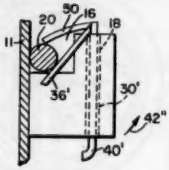
3,835,539
ORTHODONTIC APPLIANCE

Melvin Wallshein, 8645 Bay Pky., Brooklyn, N.Y. 11230

Filed Nov. 8, 1972, Ser. No. 304,741
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 A 15 Claims

A spring clip for use in association with both an arch wire and an orthodontic bracket includes a pin which is insertable through an upright retaining channel of the bracket. The length of the pin is longer than the channel and the pin is releasably secured to the bracket by a flexible free end portion which is deformable subsequent to insertion of the pin into the retaining channel. When used with an edgewise bracket having a wire containing channel in its front face, a spring clip retaining finger may be connected to an exposed free end portion of the pin which is biased to abut against the front surface of the bracket to thereby retain the arch wire within the wire

retaining channel of the bracket. Alternately, or additionally, a biassing finger may be provided which is integral with the pin at an exposed free end portion thereof and which is arranged



in pressure transmitting relationship with the wire when the biassing finger is flexed from a normally unstressed position on the opposite side to a stressed position on the same side of the wire as the pin.

3,835,540

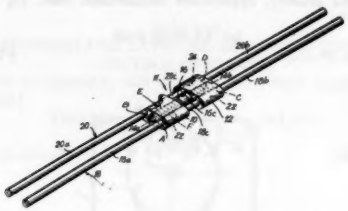
ORTHOPEDIC APPLIANCE

William Biederman, Rockville Centre, N.Y., assignor to Orthodontic International Services, Inc., Wilmington, Del.

Filed Dec. 27, 1972, Ser. No. 318,877

Int. Cl. A61c *7/00*

U.S. Cl. 32—14 E **10 Claims**



An orthopedic appliance is provided to open a midpalatal suture quickly and substantially. The appliance includes a metal construction which may be positioned in the patient's mouth so as to avoid irritation. The construction features a pair of main body sections, each including an oppositely threaded screw bore into which is threadably inserted an adjustment screw having two ends threaded in opposite directions, so that turning of the screw either brings the sections closer together or further apart depending upon the direction of turning. A pair of sectional rods straddle the adjustment screw and each rod is slidably inserted through rod bores running parallel to the threaded screw bore. The sectional construction of the rods enables their action as both slide members as the main body sections are separated and as attachment rods for mounting the appliance on the teeth of the upper jaw.

3,835,541

ELLIPSOID MARKER AND TEMPLATE TRACER

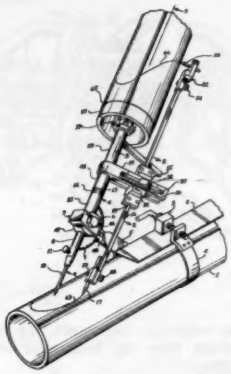
Loraine T. Whitworth, 5024 Sunkist Pl., Tucson, Ariz. 85706

Filed May 21, 1973, Ser. No. 362,109

Int. Cl. B23k *37/00;* **B43l** *11/00;* **B23k** *33/00*

U.S. Cl. 33—21 C **9 Claims**

A device for determining the apertures to be cut when mating two pipes is disclosed. The device is attached to a first one of the pipes and a pointer is angularly and positionally aligned with the center of the desired pipe junction. A first marking element is rotated about the pointer at a radius corresponding to the internal radius of a second one of the pipes to mark the aperture to be formed in the first pipe. The second pipe or a replica thereof is secured by a clamp, and aligned with the pointer. A second marking element is rotated about the second pipe to mark the end cut of the second pipe. If it is not feasible to mount the second pipe, the replica, wrapped with a sheet of paper, is mounted in its place. The sheet, after being



scribed by the second marking element, is used as a template to define the end cut of the second pipe. The device also includes provisions for accommodating various junction angles and pipe sizes.

3,835,542

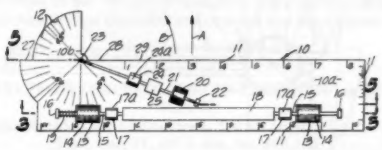
DRAFTING INSTRUMENT

Leslie L. DeMathe, 2020 W. Alameda Ave., Anaheim, Calif. 92801

Filed Aug. 17, 1972, Ser. No. 281,315

Int. Cl. B43l *13/02*

U.S. Cl. 33—109 **25 Claims**



This invention provides a mobile integral drafting instrument comprising a straight edge having a first clutch mechanism to provide vertical movement thereof on a drawing media and a second clutch mechanism to provide a circular movement thereof for drawing free and predetermined angles, straight lines and curved lines without the aid of additional instruments.

3,835,543

MEASURING INSTRUMENT

Nicholas G. Polydoris, Kenilworth, and Burnell J. Wollar, Barrington, both of Ill., assignors to ENM Company, Chicago, Ill.

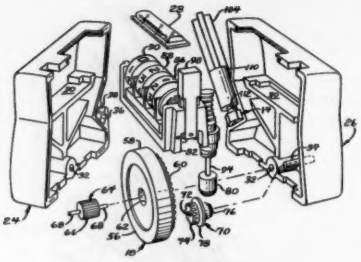
Continuation-in-part of Ser. No. 196,358, Nov. 8, 1971, Pat. No. 3,791,038. This application Nov. 30, 1973, Ser. No. 420,525

Int. Cl. G01b *3/12*

U.S. Cl. 33—141 E **4 Claims**

A measuring instrument for measuring linear distance on a surface by rolling a wheel on the surface along the linear distance to be measured. The wheel is mounted in a housing. The wheel is drivingly connected to a counter, which indicates the distance which the wheel has rolled. The counter is

calibrated to indicate linear measurement in a selected system of measurement. A fastener is mounted in the housing. A collapsible handle is releasably connected to the fastener for



manipulating the measuring instrument. The handle may be selectively removed from the instrument for convenient storage and handling.

3,835,544

IMPACT-PROTECTED GEAR UNIT FOR MEASURING TOOLS

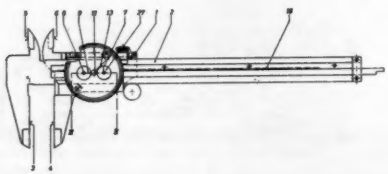
Wilhelm Schneider, Niedernhall, Germany, assignor to Schneider & Kern, Niedernhall, Germany

Continuation-in-part of Ser. No. 222,483, Feb. 1, 1972, abandoned. This application Nov. 17, 1972, Ser. No. 307,562

Claims priority, application Germany, Feb. 18, 1972, 2207601

Int. Cl. G01b 5/00

U.S. Cl. 33—147 J **14 Claims**



A slide of a measuring tool is movable along a rack and carries at least one pinion meshing with the rack. At least one transmitting disk which is rotatable on the pinion shaft and connected by gears to the indicator shaft is further connected to the pinion by a special spring so that, when the movement of the slide is suddenly stopped, the inertia of the transmitting disk continues to turn the latter and thus also the indicator shaft for a certain distance against the action of the spring which will subsequently draw the transmitting disk and the indicator shaft back to the position which corresponds to the exact measurement made by the slide.

3,835,545

DEVICE FOR PRE-LOCATING THE THUMB AND FINGER HOLE PLACEMENTS IN A BOWLING BALL

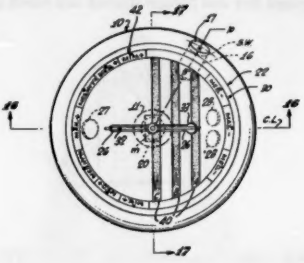
Wilson G. Taylor, Box 1421, Lake Arrowhead, Calif. 91803

Filed Apr. 19, 1973, Ser. No. 352,539

Int. Cl. G01b 3/14

U.S. Cl. 33—174 F **5 Claims**

A device for pre-locating the finger and thumb hole placement in a bowling ball in relation to a sideward located unbalancing weight, placed in a novel predetermined position, to



give a bowler a preselected ball performance irrespective of the bowler's method of delivery of the ball.

3,835,546

MEASURING DEVICE FOR CHECKING AND/OR CORRECTING THE TRANSVERSE SLOPE OF RAILWAY TRACKS

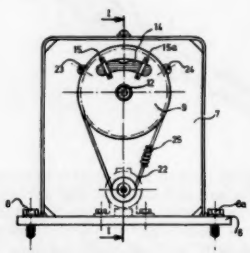
Andre Gustave Jaquet, Crissier, Switzerland, assignor to Canron, Inc., Phillipsburg, N.J.

Filed Nov. 6, 1972, Ser. No. 303,817

Claims priority, application Switzerland, Nov. 12, 1971, 16468/71

Int. Cl. B61k 9/08

U.S. Cl. 33—338 **4 Claims**



An improved measuring device for checking and/or correcting the local transverse slope of railway tracks is disclosed. The device includes a rigid chassis having sensors positioned to rest on two lines of rails in a transverse vertical plane to the track supports, and a clinometer of the electrolytic spirit level type able to supply an electrical signal proportional to its slope in said plane. The clinometer is mounted to rotate about an axis perpendicular to the plane and is continually returned to the horizontal position by a motor which is supplied with an electrical signal from said clinometer. The motor acts simultaneously on the drive of a movable member of a transducer to supply an electrical signal proportional to the degree of rotation of the clinometer relative to the rigid chassis. This degree of rotation corresponds to the local transverse slope of the track to be measured.

3,835,547

TORSION BAR GAUGE

Sigurd A. Rishovd, Minneapolis, Minn., assignor to Royal Industries, Inc., Osseo, Minn.

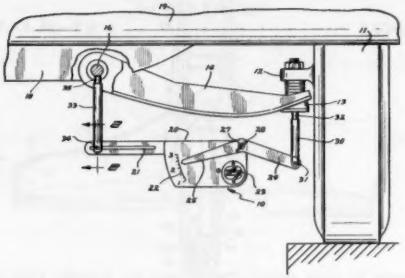
Filed Feb. 20, 1973, Ser. No. 333,635

Int. Cl. G01c 9/28

U.S. Cl. 33—347 **2 Claims**

A gauge for adjusting the suspension of automobiles using torsion bar suspension systems having a frame including in-

dicia and a gravity sensing means in the form of a bubble level and which further includes a lever arm pivotally disposed having one end forming a pointer in combination with the indicia

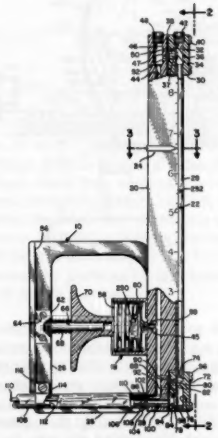


and a pair of magnetic support members, one pivotally disposed in an elongated slot in one end of the frame and the other pivotally disposed on the other end of the lever arm.

3,835,548
HYDROSTATIC LEVELING APPARATUS WITH CONTROL OPERATOR

Walter S. Gearhart, 448 Orlando Ave., State College, Pa. 16801

Filed Mar. 19, 1973, Ser. No. 342,515
Int. Cl. G01c *9/22*
U.S. Cl. 33—367 **58 Claims**

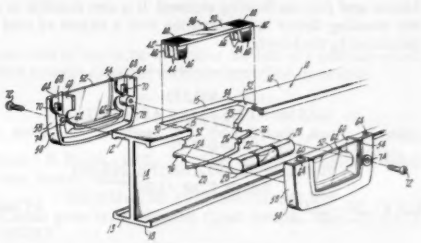


A liquid apparatus for determining level points including a reservoir assembly, a sight tube assembly, and a connecting liquid conduit is improved in order to prevent (1) the spillage or overflow of the liquid and (2) the passage of air bubbles into the conduit. Atmospheric vent valve assemblies are positioned above the liquid in the reservoir assembly and the sight tube assembly. Liquid valve assemblies are positioned adjacent the connections to the conduit on the reservoir assembly and the sight tube assembly. All four of these valve assemblies are controlled by a single remote control operator positioned on the sight tube assembly. Simplified alternative embodiments omit one or both of the valve assemblies on the reservoir assembly.

3,835,549
LEVEL VIAL STATION ASSEMBLY

Maarten C. De Jong, Canton, and Antoni P. Gutowski, New Britain, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Sept. 13, 1973, Ser. No. 397,083
Int. Cl. G01c *9/28*
U.S. Cl. 33—379 **4 Claims**



A level having a working surface provided with a machined opening so that a level vial mounted with its axis coincident with the central plane of the web of the level frame is visible through the opening from directly above the level. A window having downwardly depending bifurcated legs which straddle the web closes the opening and is secured in place by engagement with a pair of vial retaining caps which are fixed on the sides of the web. The outermost surfaces of the legs of the window are serrated to interlock with mating serrations of the inner walls of the vial retaining caps to accommodate dimensional variations of the machined opening and the window.

3,835,550
FREEZE-DRYING PROCESS FOR PRODUCING A DRY PLANT

Kazuko Kaneko, 5-3-7 Komazawa, Tokyo, Japan

Filed Aug. 21, 1973, Ser. No. 390,181
Claims priority, application Japan, Aug. 21, 1972, 47-83422
Int. Cl. F26b *5/06*
U.S. Cl. 34—5 **7 Claims**

A process for producing dried plants without changing their original shape which comprises substituting the water content of the plant with an organic solvent having a freeze point of −5 to 35° C and a vapor pressure of more than 4.58 mmHg at its freeze point, freezing and drying the plant.

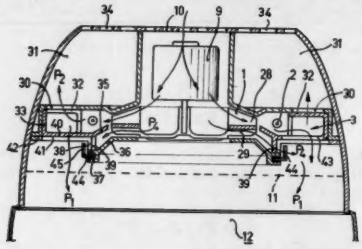
3,835,551
HAIR DRYING HOOD

Keimpe Klaas Keimpema; Marcus Fokke Van Der Veen; Andreas Fredericus Rietveld, and Jan Andreas Schoo, all of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 25, 1973, Ser. No. 382,588
Claims priority, application Netherlands, Aug. 24, 1972, 7211529
Int. Cl. A45d *20/24*
U.S. Cl. 34—100 **10 Claims**

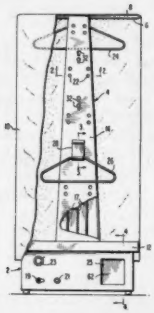
In a hair drying hood comprising a blower driven by an electric motor and a heating element, the drying conditions inside the hood can be varied by means of a bleeding device. This

bleeding device permits part of the heated air to be blown directly out of the hood or to be recirculated through the



blower and past the heating element. It is also possible to use the bleeding device in combination with a stream of cold air produced by the blower.

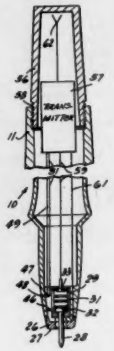
3,835,552
GARMENT HEATING APPARATUS
John G. Lord, Swarthmore, Pa., assignor to Cotton Incorporated, New York, N.Y.
Filed June 15, 1972, Ser. No. 263,061
Int. Cl. F26b *13/00*
U.S. Cl. 34—151 **6 Claims**



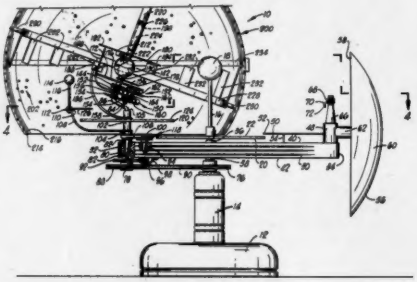
Garment hangers are supported by an upstanding rigid conduit which is provided with hot air discharge openings. The hanger and conduit are located within an enclosure formed in part by a flexible curtain which is supported by the conduit and has a lower portion conforming to the peripheral wall of a conduit-supporting base. A blower within the base forces air from within the conduit past heating elements and then through the hot air discharge openings into the interior of the enclosure. The heated air then either is released to the atmosphere or follows a closed path within the enclosure, returning to the inlet of the blower.

3,835,553
APPARATUS FOR TEACHING
Joseph Mason Kirton, and J. Wanless Southwick, both of Bountiful, Utah, assignors to Research Enterprises, Inc., Woods Cross, Utah
Filed Jan. 12, 1973, Ser. No. 322,928
Int. Cl. G09b *7/00*
U.S. Cl. 35—9 C **2 Claims**

A teaching device having a pair of electrodes at its tip normally insulated from each other but which when placed against conductive material completes a circuit to actuate an indicator. The indicator might be in the form of a light or a counter, mounted either in the device, or remotely coupled to the device by a suitable radio transmitting means, or wiring. In certain embodiments, second means are provided for indicating when the device has been actuated by the student such that the number of actuations may be compared with the number of times that a conductive area was encountered so as to allow grading of test results to be accomplished.



3,835,554
MINI-SCALE SPACE MECHANICS SIMULATOR
John B. Mast, Rt. 2, Box 41, Weatherford, Okla. 73096
Filed May 9, 1973, Ser. No. 358,703
Int. Cl. G09b *27/02*
U.S. Cl. 35—45 **14 Claims**



An improved space mechanics simulator having a sun model, an earth model and a moon model mounted to demonstrate the movement of each relative to the other and the relationship between the rotational speeds of each, the space simulator also including a scaled sun simulator and scaled planet models for demonstrating the relative sizes of the planet models with respect to the sun simulator and the distances therebetween. The space simulator also includes a calendar indicating plate, a moon phase indicator plate, a time chart, zodiac indicator plates, and a celestial sphere demonstrating the month, day, season, hour, the relative positions of the signs of the zodiac, phase of the moon, and the position of the various stars in rotated positions of the earth model and the moon model about the sun model.

3,835,555
LIGHTWEIGHT SHOE, IN PARTICULAR INDOOR OR LEISURE WEAR SHOE

Dr. Josef Hefele, Riesheimer, Germany, assignor to Kufner Textilwerke KG

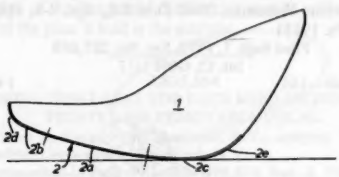
Filed Feb. 28, 1973, Ser. No. 336,475
Claims priority, application Germany, Mar. 1, 1972, 7207835
Int. Cl. A43b 1/02
U.S. Cl. 36—9 R 8 Claims

A shoe whereof the upper has a double layer of woven and/or textured fabrics which for mutual connection are glued to an intermediate layer, wherein the said intermediate layer consists of at least one sheet of textile fabric which is joined by a coating of hot-setting adhesive discontinuously applied on both of its sides, to the double layer.

3,835,556
BASE FOR FOOTWEAR CONTRIBUTING TO COMFORTABLE AND GRACEFUL WALKING

Alexander Michael Panaretos, 1 Bizaniou St., Attica, Greece

Filed Mar. 16, 1973, Ser. No. 341,940
Claims priority, application Greece, Apr. 26, 1972, 48137
Int. Cl. A43b 13/08
U.S. Cl. 36—33 2 Claims



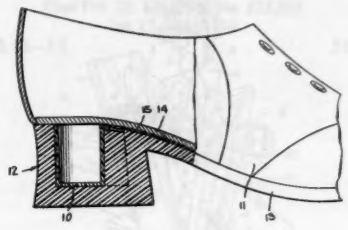
A base for articles of footwear and articles of footwear comprising such a base. Such base comprises a rigid platform of which the ground-contacting surface extends in a continuous convex curve from the front (toe) end to the rear (heel) end. Said convex curve includes a middle portion for location beneath the foot-arch of the wearer which has a radius of curvature greater than the portions of said convex curve lying either side of said middle portion.

3,835,557
HEEL INSERT FOR HIGH-HEEL SHOE

Morris Sussman, Freeport, N.Y., assignor to Shore Plastics, Inc., Freeport, N.Y.

Filed Sept. 4, 1973, Ser. No. 393,836
Int. Cl. A43b 21/00
U.S. Cl. 36—34 A 5 Claims

A heel insert adapted to cooperate with a stiffener shank and serving to reduce the amount of plastic material necessary to mold the heel of a high-heel shoe. The insert is preferably formed of polystyrene and is defined by a hollow, heel-shaped body having an open top which is adhered to an inner sole, the front wall of the body having a niche therein which when the heel is molded about the insert, is filled with plastic material to lock the insert within the heel. A recessed seat is formed at the

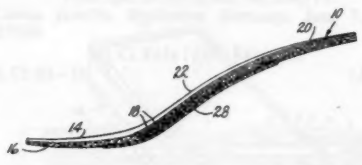


upper end of the niche to receive the end of a stiffener shank which extends along the undersurface of the inner sole.

3,835,558
INSOLE

Howard B. Revill, Oadby, England, assignor to USM Corporation, Boston, Mass.

Filed Mar. 20, 1973, Ser. No. 342,999
Claims priority, application Great Britain, Mar. 25, 1972, 14107/72
Int. Cl. A43b 13/38
U.S. Cl. 36—44 6 Claims



Insole of non-woven bonded fiber sheet material including a shank portion of greater stiffness and density than the forward portion in which a through layer of non-woven fiber sheet including a heat-softenable binder is associated with one or more layers of non-woven fiber sheet including binder in the heel and shank or waist portion of the insole and the layers in the heel and shank or waist portion are consolidated by heat and pressure to a unitary board-like state in the heel and shank region. The insole including the heel and shank region may be given a contour approximating the contour of a bottom of a foot in a pressing operation and may also incorporate a layer of stiff plastic sheet material.

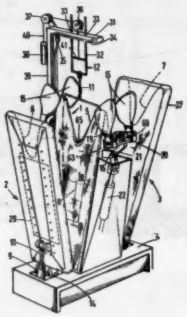
3,835,559
MACHINE FOR IRONING TROUSERS

Gustav Kotter, 452 Melle, Meller Berg 44, Germany

Filed Feb. 27, 1973, Ser. No. 336,330
Claims priority, application Germany, Mar. 27, 1972, 2214970
Int. Cl. D06f 71/00
U.S. Cl. 38—21 16 Claims

The machine comprises an ironing plate, which is adapted to be pressed against a stationary support, or two ironing plates, which are adapted to be pressed against a stationary, intermediate body having a intermediate recess, with the legs

of the trousers being interposed between the ironing plates and said body. The ironing plates and the support body are



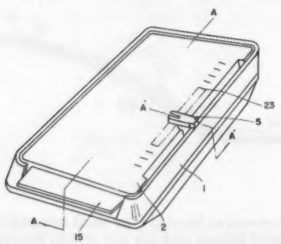
provided with divided pressure plates, which extend substantially parallel to the creases and are disposed on both sides of the trouser seam.

3,835,560

INDEXING POINTER FOR LIST FINDERS

Chuzo Mori, Tokyo, Japan, assignor to Carl Manufacturing Company, Tokyo, Japan

Continuation-in-part of Ser. No. 216,645, Jan. 10, 1972, abandoned. This application Mar. 8, 1973, Ser. No. 339,190
Claims priority, application Japan, Feb. 18, 1971, 46-9190
Int. Cl. G09f *11/00*
U.S. Cl. 40—104.01 **22 Claims**



A list finder comprises a holder having a plurality of stacked information cards mounted therein and a releasable one-piece, plastic cover pivotally mounted thereon. A U-shaped indexing pointer, composed of a flexible plastic material, is slidably mounted along an edge of the cover to selectively expose a chosen card upon release of the cover. The pointer is detachably mounted on the cover and combined guide and locating means are formed on the cover and on the pointer to facilitate such sliding and detachment desiderata. In addition, the holder preferably has a rectangular receptacle formed therein to accommodate a stack of memo sheets, beneath the information cards.

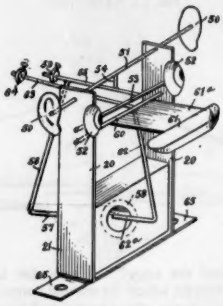
3,835,561

ANIMATING DEVICE

Ernest Camerino, Ft. Lauderdale, Fla., assignor to Lucian Ernest Camerino, Plantation, Fla.

Filed Apr. 10, 1973, Ser. No. 349,828
Int. Cl. G09f *19/08*
U.S. Cl. 40—106.32 **6 Claims**

An animating device for imparting movement to parts of a doll, puppet, human or animal figure or an animated figure forming portion of a sign or display, or any other object wherein certain motion is desired. The invention contemplates the employment of one or more solenoids that are energized by a source of power such as by dry batteries which can be concealed within the body of the figure, or by other electrical means. The parts to be animated, such as the eyes, ears, lips etc. are carried by pivotal or other movably mounted pull rods



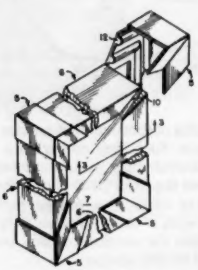
such rods having integral or attached parts which constitute armatures or cores of the solenoid or solenoids so that when the solenoids are energized the parts will be moved in one direction. Retractive means, such as balance weights are provided to move the parts in a direction opposite to that in which they were moved by the energization of the solenoid or solenoids.

3,835,562

ADJUSTABLE STRUCTURES THAT FRAME OR SUPPORT PICTURES OR PANELS OF VARIOUS DIMENSIONS

Alan Thistlethwaite, 6708 Chew Ave., Philadelphia, Pa. 19119, and Arthur Weissman, 3900 Ford Rd., Apt. 4-S, Philadelphia, Pa. 19131

Filed Sept. 7, 1972, Ser. No. 287,058
Int. Cl. G09f *1/12*
U.S. Cl. 40—155 **1 Claim**



These structures have been designed for the purpose of easily framing or supporting pictures or panels, such as paintings, posters, prints, canvas, cardboard, photos, signs, etc.

The primary goal in the design has been to embody several desirable features and advantages in a single frame, thereby producing the "optimum" design. One of these features and advantages is the ability to frame panels which vary in all three dimensions-length, width, and thickness. This eliminates the need for the retailers to maintain a large inventory of section sizes, and eliminates the need for the customer to measure the exact dimensions of his panel. Other characteristics include the relative ease of assembly, low cost and attractive appearance.

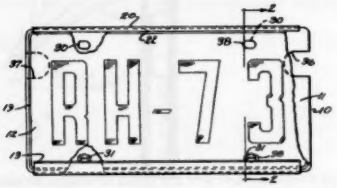
This is accomplished by providing 4 sides whose lengths may be adjusted by breaking, sawing, cutting, or otherwise severing, and by providing 4 corners which cover up any mismatch or ragged edges where the sides meet caused by the severing process. The corner pieces are also designed to provide structural integrity to the frame.

3,835,563

LICENSE PLATE RETAINER

Robert D. Hanstad, 1450 N. Springfield Ave., Chicago, Ill. 60651

Filed Oct. 2, 1972, Ser. No. 294,278
Int. Cl. G09f 7/00
U.S. Cl. 40—209 2 Claims



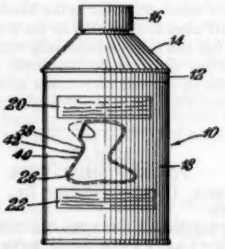
A display holder for a vehicle license-type plate having a rigid backing section and retainer flanges extending along opposite longitudinal edges of the backing section engageable with the upper and lower longitudinal edges of a plate with one of the flanges providing a slot into which a first edge of a plate is adapted to be inserted and the other flange permitting the second edge of the plate being inserted beneath the end thereof for holding the second edge, and the said other flange is provided with a camming surface which is adapted to be engaged by the second edge of the plate and resiliently moved upwardly to permit the second edge being inserted between the edge of the flange and the backing section while the first edge of the plate is held in the said slot.

3,835,564

COMBINATION LABEL FOR PACKAGED PRODUCT AND PRINTED-ON REMOVABLE DECAL

Lawrence A. Gottschalk, Montrose, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 873,574, Nov. 3, 1969, Pat. No. 3,638,340. This application Oct. 29, 1971, Ser. No. 193,625The portion of the term of this patent subsequent to Feb. 1, 1989, has been disclaimed.
Int. Cl. G09f 3/02
U.S. Cl. 40—306 1 Claim



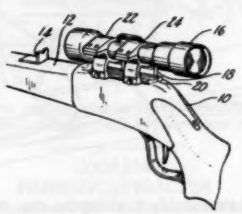
Disclosed is the novel combination of a packaged product and a label attached thereto and having a water-soluble decal printed thereon, the decal being outlined by a perforated tear line along which a part of the label bearing the decal can be torn free from the label.

3,835,565

TELESCOPIC SIGHT MOUNTING

Gerald T. Weast, Hazel Park, Mich., assignor to Clear View Manufacturing Company

Filed Feb. 20, 1973, Ser. No. 333,898
Int. Cl. F41g 1/38
U.S. Cl. 42—1 S 3 Claims



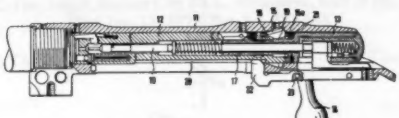
A mounting for supporting a telescopic sight on a base plate fastened to the receiver of a firearm having iron sights. The mounting has a pair of spaced walls with grooves mated with the side edges of the base plate, such that the user can view the iron sights along a line of sight passing between the spaced walls.

3,835,566

CYLINDER BREECH MECHANISM FOR SMALL ARMS

Heinz Bielfeldt, deceased, late of Eckernforde, Germany (Gerlinde Bielfeldt, heir); Christiane Diehl, Kiel, and Karsten Bielfeldt, Eckernforde, both of Germany (heirs), assignors to J. P. Sauer & Sohn GmbH, Eckernforde, Germany

Filed Apr. 26, 1973, Ser. No. 354,774
Claims priority, application Germany, June 7, 1972, 2227780
Int. Cl. F41c 11/06; F41d 3/00
U.S. Cl. 42—16 14 Claims



A firearm includes a receiver, a barrel, a bolt slidable in the receiver, spreaders mounted in the bolt for being pivoted into a locking recess on the receiver and a locking element for shifting the spraders. The locking element includes rotatable spreader cams to extend the spreaders in response to rotation of the locking element in one direction, and includes unlocking cams operable to engage and shift the spreaders to a retracted position in response to rotation of the locking element in the opposite direction. A latch is provided to prevent the locking element from rotating relative to the bolt when the bolt is withdrawn from the receiver.

3,835,567

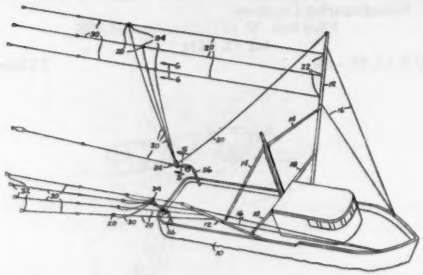
TROLL FISHING APPARATUS

Wilbur E. Humbert, and Fred W. Humbert, both of 1914 N. Bay Dr., North Bend, Oreg.

Filed Sept. 10, 1973, Ser. No. 395,423
Int. Cl. A01k 79/00
U.S. Cl. 43—6.5 11 Claims

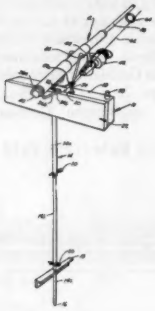
Fishing apparatus for use with a trolled fishing lure having on one end a fish lure and on the other end a stop, comprising a trolled line support and receiving means positioned on the support for releasably retaining the stop in the trolling position

of the line. A reel is mounted for rotation in a predetermined station relative to the support. Stop receiving means is present



on the reel for releasably retaining the stop in the retrieving position of the line. When a fish strikes, the trolled line is transferred from the support to the reel, and reeled in.

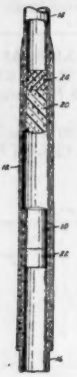
3,835,568
FISHING ROD AND REEL ASSEMBLY HOLDER
Willis C. Whitfield, 1201 W. Market St., Taylorville, Ill. 62568
Filed Aug. 29, 1973, Ser. No. 392,654
Int. Cl. A01k *97/12*
U.S. Cl. 43—17 **9 Claims**



A fishing rod and reel assembly holder having means for signalling a stroke. The holder includes an upright support and an alarm box carried by the top of the upright support. Clamping means are carried by the top of the alarm box and a pair of opposed forward and reward U-shaped members, the legs of both of which are adjustably held by the clamping means, provide a rod and reel assembly support. Lever actuated switch means is mounted within the box with the lever thereof positioned through the top of the box so that the fishing line may pass from the reel around the lever and then through the eylets on the rod and into the water. The slightest pull on the fishing line of a supported fishing rod and reel assembly by a striking fish triggers the lever, actuates the switch and initiates the alarm.

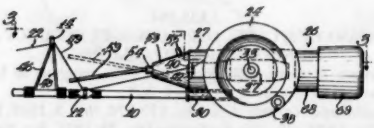
3,835,569
FIBER REINFORCED RESIN FISHING ROD
Jay W. Gould, III, Bloomington, Minn., and Phillip William Phillipson, Denver, Colo., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 9, 1973, Ser. No. 414,269
Int. Cl. A01k *87/02*
U.S. Cl. 43—18 GF **2 Claims**

A hollow two-piece fiberglass fishing rod having a tubular fiberglass ferrule in which resilient, shock absorbing, strongly fiberglass adherent adhesive plugs bond themselves to the interior of and fill the ends of the butt section that fits into the ferrule and the tip section adjacent the ferrule. The end of the butt section within the ferrule is protected against the severe



stresses of casting and playing fish by the adhesive plug therein and the butt section and tip section are firmly held together aided by a partial vacuum created in the ferrule between the two adhesive plugs when there is any relative movement tending to pull the rod sections apart.

3,835,570
MOTORIZED FISHING DEVICE
Charles R. Philip, Box 116, Haugen, Wis. 54841
Filed Jan. 26, 1973, Ser. No. 326,967
Int. Cl. A01k *87/00*
U.S. Cl. 43—19.2 **14 Claims**

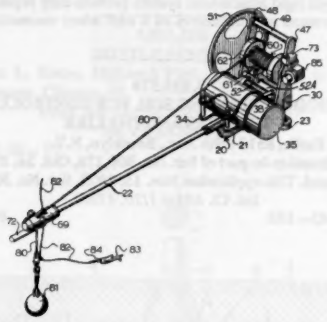


A motorized fishing device including a rod having line guides, a handle secured to the rod, a reel on the handle, a line secured to the reel and extending through the line guides on the rod, a drive motor mounted in the handle including a rotary drive shaft extending parallel to the rod, and an arm or finger having one end mounted coaxially with the shaft and an eccentric portion disposed to repeatedly strike an intermediate portion of the line on rotation of the drive shaft so that the free end of the line is rapidly jigged up and down.

3,835,571
POWER FISHING REEL
Arthur E. Berry, 18645 Cambridge Dr., Lathrup Village, Mich. 48076
Filed Dec. 11, 1972, Ser. No. 313,864
Int. Cl. A01k *87/04, 89/02*; **B65h** *75/30*
U.S. Cl. 43—21 **8 Claims**

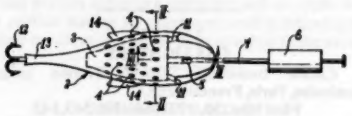
A power fishing reel having a reversible drive for raising and lowering metal line and a heavy sinker in deep-water trolling. A fishing line, bait, and hooks are releasably attached adjacent the sinker and are thus put down to the desired depth and separate from the sinker line upon a fish taking the bait. Drive is controlled by a switch so that when a fish is caught, the

fisherman throws the switch and the sinker line and sinker are pulled up by the power reel, preventing fouling of the lines by the action of the fish. The reel is provided with drive disengagement means to lower the sinker quickly by gravity, brakes to control the outrun to prevent back-lash, level-wind means,



a displaceable sheave to insert the line radially, and a two position roller for leading the sinker line to the center of the sheave on either side of a boat with the roller absorbing angular changes at the sheave from pitching and rocking of the boat.

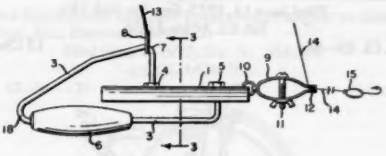
3,835,572
FISHING LURE
Reginald Mounsey, Hannon St., Sea Lake, Australia
Filed July 10, 1972, Ser. No. 269,938
Claims priority, application Australia, July 15, 1971, 5558/71; Sept. 28, 1971, 6454/71
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.06 **6 Claims**



A fishing lure formed of a body member having a chamber defined therein for receiving a dispersible bait, and at least one opening in a wall of the member to allow bait to escape from the chamber. The bait is pre-prepared and may be in any form, but is such that it will dissolve or be broken down by contact with water. The body member is arranged so that water can pass through the bait chamber so as to progressively dissolve or break down the body of bait contained therein, and carry that bait out of each escape opening. At least one barbed hook is attached to the body member. Check-valve means are mounted in the chamber to prevent inadvertent removal of the bait through the bait admitting aperture of the lure.

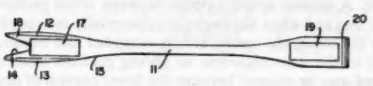
3,835,573
LINE RELEASE TROLLING PLANER
Hans J. Borchardt, 4664 Norwood, Wilmington, Del. 19803
Filed Jan. 31, 1973, Ser. No. 327,407
Int. Cl. A01k *95/00*
U.S. Cl. 43—43.12 **2 Claims**

A trolling planer comprising a rectangular plate with a freely movable line release mechanism attached to the rear end thereof. A wire frame with a weight thereon is secured to the plate and a ring, which is attached to a line secured to a vessel, is slidably mounted on the frame. The release mechanism holds a trolled fishing line in a deep submerged position until the strike of a fish detaches the fishing line from the release



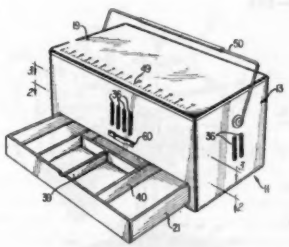
mechanism, the trolling planer being thereafter separately retrieved without interfering with the capture of the fish.

3,835,574
FISHHOOK EXTRACTOR
Ralph Russell Harwood, 1030 Chalmers, Detroit, Mich. 48215
Filed Apr. 2, 1973, Ser. No. 347,327
Int. Cl. A01k *97/00*
U.S. Cl. 43—53.5 **5 Claims**



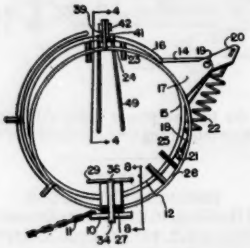
The present invention relates to a fishhook extractor for removing a fishhook embedded in a fish's mouth comprising an elongated handle having a bifurcated end portion with a magnet disposed at said end portion for engaging and holding the fishhook.

3,835,575
RENEWABLE BAIT AND TACKLE CONTAINER
Arnetta B. Kelley, Turtle Mound Rd., Eau Gallie, and Harvey C. Poe, 540 N. Harbor City Blvd., Melbourne, both of Fla.
Filed Jan. 11, 1973, Ser. No. 322,684
Int. Cl. A01k *97/00*
U.S. Cl. 43—56 **7 Claims**



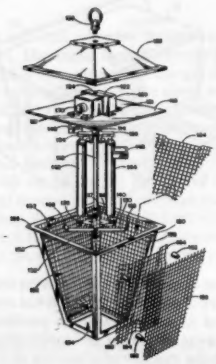
The invention comprises a combination bait and tackle box characterized by a porous liner which has rounded corners at the junctions of its verticle walls to preclude bait fish from crowding into a sqaure corner and suffocating. The liner communicates with the exterior of a housing or frame therefor via openings to permit the bait fish to suck air into the liner. A battery operated aerating pump is contained in a space below the liner in the housing and the housing also includes a space for one or more drawers which are interchangeable to permit the appropriate drawer full of tackle to be selected for the type fishing to be pursued; i.e., salt water, fresh water, snook, bass, trout or the like.

3,835,576
HUMANE TRAP
Henry William Steiner, Dryden, Ontario, Canada, assignor to Colonial Mirror and Glass Corporation
Filed June 11, 1973, Ser. No. 368,720
Int. Cl. A01m *23/26*
U.S. Cl. 43—86 13 Claims



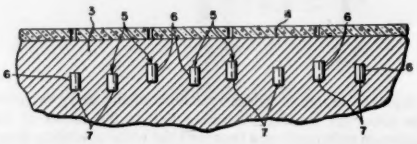
The trap consists of a pair of rings pivotally secured together at one side thereof in juxtaposition one with the other. A tension spring extends between offset portions on each ring and when the rings are substantially concentric one with the other, the spring is fully extended and biassing the rings to the non-concentric or sprung position whereby an animal may be trapped between the lower portion of one ring and the upper portion of the other ring. The trap is held in concentric or set position either by means of pan or foot treadle trigger mechanism adjacent the base of the rings or by a swinging trigger mechanism between the upper sides of the rings with the trigger or actuating members extending down across the area defined by the rings. This swinging trigger can operate the trap by movement of an animal through the rings in either direction and the trap can be used on land or in the water as desired.

3,835,577
ELECTRICAL DISCHARGE INSECT CONTROL SYSTEM
George D. Soulos, Chelmsford, Mass., assignor to Gem Insect Control, Inc., Lowell, Mass.
Filed Apr. 26, 1972, Ser. No. 247,858
Int. Cl. A01m *1/22*
U.S. Cl. 43—112 12 Claims



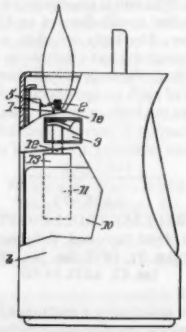
An electrical discharge, insect control system operative to attract insects to a space between inner and outer electrified screens where insect electrocution is accomplished. System elements are positioned by attachment to a rigid, central support column, vertically traversing the entire structure so as to provide a strong support which reinforces the unit against physical damage. The inner and outer wire meshes are spaced by a plurality of extended length, slippery insulators which prevent impairment of the electric field between screens from an accumulation of insects on the insulators. The outer screen is collared with rigid end bands which maintain screen shape and prevent abrasion from contact with screen edges. A simplified, yet rigid attachment system permits easy replacement of the screens and insulators as a unit when necessitated by damage.

3,835,578
METHOD OF TREATING SOIL FOR CONTROLLING TERMITES AND THE LIKE
Mario J. Basile, 8512 Fifth Ave., Brooklyn, N.Y.
Continuation-in-part of Ser. No. 300,278, Oct. 24, 1972, abandoned. This application Nov. 15, 1972, Ser. No. 306,933
Int. Cl. A01m *1/20, 17/00*
U.S. Cl. 43—132 8 Claims



A soil is treated for termite or like control by dispersing in the soil a termite toxic insecticide in an active available state and a termite toxic insecticide in an initially unavailable state and timed to be released before complete dissipation of the immediately available insecticide. The initially unavailable insecticide is enveloped in a metal container which corrodes in the soil environment or in a synthetic organic polymeric resin envelope which is degraded to release the insecticide shortly before dissipation of the initially available insecticide to increase the time of termite inhibition in the soil, or in a metal container which corrodes and an organic polymeric resin plug, which plug is attractive to and edible by the termites.

3,835,579
GAS LIGHTERS
Jean Claude Beaudouin, Elbeuf, France, assignor to Flaminaire, Paris, France
Filed Mar. 20, 1973, Ser. No. 343,143
Claims priority, application France, Mar. 28, 1972, 72.10918
Int. Cl. 431 *353*; F23d *13/04*
U.S. Cl. 431—344 11 Claims



The gas lighter comprises a reservoir containing a liquefied gas, an expansion device arranged to cause this liquefied gas

to pass from its liquid phase to its gaseous phase, an escape passage comprising an outlet valve, and a tubular burner. The tubular burner comprises, in the vicinity of its outlet, a bundle of parallel wires arranged axially and projecting beyond the end of the tubular burner.

3,835,580
BOTTLE SAND TOY

Mervyn L. Keces, Highland Park, Ill., assignor to Tarrson Company, Chicago, Ill.

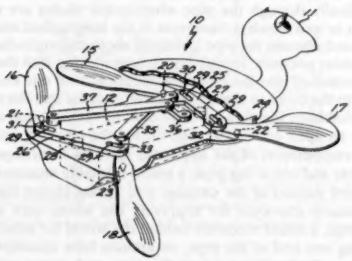
Filed July 26, 1973, Ser. No. 382,647
Int. Cl. A63h *33/00*
U.S. Cl. 46—11 **2 Claims**

A child's sand toy having individual take-apart components each of which have separate utility in connection with sand play. The toy comprises a simulated soft-drink bottle having a lower base portion defining a container and an upper funnel-shaped portion having an open neck and a reticulated cap which may be selectively removed or attached to the neck.

3,835,581
SWIMMING TURTLE

Charles K. Grieder, 700 S. Lyon, Santa Ana, Calif.

Filed Sept. 25, 1972, Ser. No. 292,061
Int. Cl. A63h *23/10*
U.S. Cl. 46—92 **12 Claims**

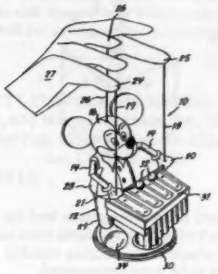


The present invention relates to a water toy; and more particularly relates to a turtle-like water toy whose movements simulate the turtle stroke of the real aquatic animal. The subject application discloses a mechanical linkage that causes four turtle flippers to move in a simulated turtle-like manner; thus causing the turtle-like water toy to move through the water in a turtle-like manner.

3,835,582
MARIONETTE ASSEMBLY WITH MANIPULATING GLOVE

Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner Bros., Inc., Elmwood Park, N.J.

Filed Sept. 6, 1973, Ser. No. 394,954
Int. Cl. A63h *7/00*
U.S. Cl. 46—126 **4 Claims**

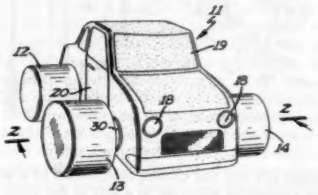


A marionette assembly having the figure actuating cords detachably anchored to the extremities of the finger sections of an interchangable (right/left hand) glove.

3,835,583
WHEELED TOY

Raymond J. Manning, 450 Edmund Ave., St. Paul, Minn. 55103

Filed Oct. 16, 1972, Ser. No. 297,946
Int. Cl. A63h *11/10*
U.S. Cl. 46—201 **8 Claims**

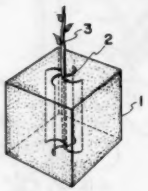


A soft resilient wheeled toy formed of a body of foamed resilient compressible material and relatively wide wheels of the same material which are secured to the body by hubs and axle members which do not extend outwardly to the outer surfaces of the wheels. Because of the construction, there are no hard surfaces to engage furniture or the user of the toy. The wheels are preferably of a width at least one-fifth of the width of the body of the toy. The toy may simulate in appearance any of various automotive vehicles or it may simulate some animal such as a worm. In the latter case, the body may consist of two parts pivotally connected together with at least one wheel adjacent the pivotal connection and eccentrically mounted so that as the toy is moved along, the body parts move with respect to each other.

3,835,584
SYNTHETIC FORM RESIN PROPAGATION BED FOR PLANTS CUTTING

Munenari Shimazu, 4-943-20, Matsumi-cho, Kanagawa-ku, Yokohama, Japan

Filed Dec. 20, 1972, Ser. No. 316,922
Claims priority, application Japan, Jan. 7, 1972, 47-5139
Int. Cl. A01g 9/02
U.S. Cl. 47—37 3 Claims

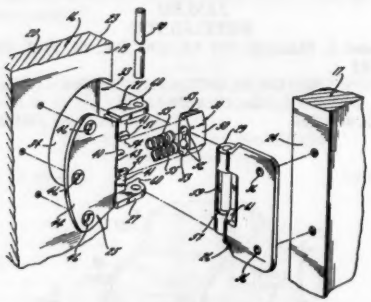


A synthetic foam resin propagation bed for plant cuttings provided by a block of spongy synthetic resin having a longitudinal slot of a χ-shape cross section capable of receiving a plant graft therein to be water-propagated.

3,835,585
SELF-CLOSING HINGE

Lloyd L. Anderson, and Richard J. King, both of Rockford, Ill., assignors to Amerock Corporation, Rockford, Ill.

Filed Oct. 11, 1972, Ser. No. 296,623
Int. Cl. E05d 7/00
U.S. Cl. 49—398 12 Claims



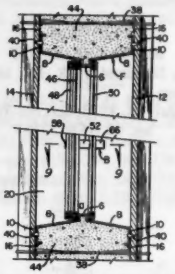
The hinge pin and self-closing mechanism of a self-closing hinge are compactly received in a slot in the inner side of a cabinet door and are concealed from view from the front of the cabinet. In one embodiment, the hinge may be quickly attached to and detached from the door.

3,835,586
KNOCK-DOWN WINDOW FRAME

H. Gordon Gates, Denver, and Robert Brendel, Aurora, both of Colo., assignors to Gates & Sons, Inc., Denver, Colo.

Filed June 21, 1973, Ser. No. 372,290
Int. Cl. E06b 3/32
U.S. Cl. 49—463 6 Claims

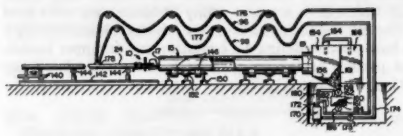
A knock-down completely reversible, basement window frame is provided having identical top and bottom rails and identical side rails which have slots and tabs at the ends thereof for fitting together to form a rigid window frame. The frame has a central bead for receiving a spring clip which holds both a window sash and screen and a storm sash with the window sash and screen being positioned on the outside of the bead and the storm sash on the inside of the bead so that rain striking the outside of the window sash will run down the bead and back out of the window frame rather than to the inside. A fastener is formed integrally with the upper and lower rails for attaching the window frame within forms for pouring a concrete wall.



3,835,587
PIPE CLEANING APPARATUS AND METHOD

Wayne Culver Hall, Jr., 20100 S. Beavercreek Rd., Oregon City, Oreg. 97045

Filed July 3, 1973, Ser. No. 376,237
Int. Cl. B24c 1/00, 3/16
U.S. Cl. 51—9 10 Claims



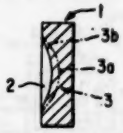
An apparatus and method for cleaning the interior surface of pipes by throwing abrasive material into contact with the internal surface of the pipe from blades on a wheel moving longitudinally through the pipe wherein the blades are rotating about an axis which is transverse to the longitudinal axis of the pipe and wherein the pipe is rotated about its longitudinal axis. Air under pressure, issuing from a tube moving with the wheel, is introduced into the pipe in a direction from one end of the pipe to the other so that the abrasive material and the material abraded from the pipe are moved along the pipe and expelled from an open end of the pipe during the cleaning operation. One embodiment of the apparatus includes a carriage movable into and out of the pipe, a wheel rotatably mounted on the forward portion of the carriage and having blades thereon, a pneumatic conveyor for supplying the wheel with abrasive material, a shield mounted behind the wheel for substantially closing one end of the pipe, an arcuate tube mounted to the carriage for feeding air into the pipe, and power rollers for supporting the pipe and rotating it about its longitudinal axis. The rotating wheel is inserted in one open end of the pipe and, as it is moved therethrough, the air under pressure is introduced into the pipe and moves the abrasive material and the material abraded from the pipe along the pipe and out the opposite open end of the pipe. The abrasive material is then separated from the material abraded from the pipe for reuse on subsequent pipes.

3,835,588

LENTICULAR CONTACT LENSE LATHE

Keith A. Whitham, Cheektowaga, N.Y., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 5, 1973, Ser. No. 338,245
Int. Cl. B24b *1/00, 13/00*
U.S. Cl. 51—58 **12 Claims**



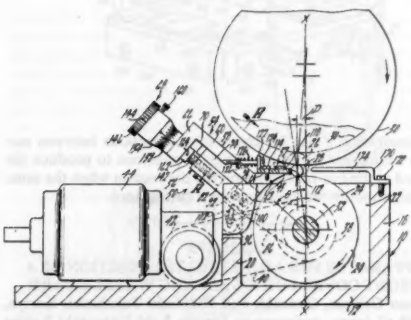
A process for shaping lenticular contact lenses comprising the steps of casting a lense blank with a cast surface shaped to fit over the cornea and of shaping the opposite surface by first shaping the central portion of the optical surface by generating a curvature of the desired radius, and thereafter shaping the peripheral or outer portion of the optical surface by generating a curvature of the other desired radius. The steps are carried out sequentially and automatically on a novel machine. The machine comprises a tool holder mounted on a slidable support pivoted around a first pivot pin. The first pivot pin is supported on a second slidable support pivoted around a second pivot pin. The adjustable swing of the supports determine the multiple curvatures of the optical surface. The pivoted supports are moved sequentially and automatically by interconnecting them with a lost motion connection, whereby one support and the tool pivots freely to generate one curvature until the lost motion is taken up and then the other support and tool pivots to generate the other curvature.

3,835,589

CENTERLESS GRINDING FIXTURE FOR SYNTHETIC CRYSTAL RODS AND THE LIKE

Emanuel Silverman, 14401 Hartsook, Oak Park, Mich. 91403

Filed Sept. 6, 1972, Ser. No. 286,549
Int. Cl. B24b *5/18*
U.S. Cl. 51—103 WH **12 Claims**



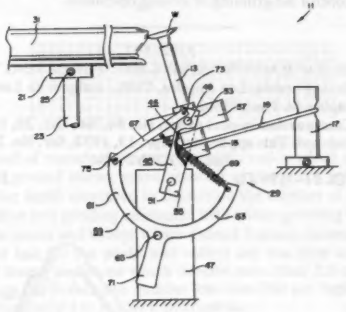
A centerless grinding fixture for grinding rough, out of round rods to roundness and predetermined dimension by a grinding wheel, the fixture and wheel being movable relative to each other in a plane transversely of the rod. A rod support roll, a base support for the roll, a guide member extending longitudinally above the roll and below the grinding wheel for resiliently contacting the rod and capable of reacting away from the rod for altering the pattern of feed of the rod past the grinding wheel, carrying means for the guide member adjustable by a screw member along an axis making an acute angle of between 40° to 50° with a plane containing the axes of the grind wheel and roll whereby the guide member may be moved downwardly relative to the roll and inwardly relative to said plane to effect trueing of the rod and a reduction in its size while maintaining said resilient contact of the guide member with respect to the rod in a tangent plane substantially paralleling said plane through the axes of the grinding wheel and roll. Supporting means for the carrying means mounted on the roll support and which may be pivoted about the axis of the roll for adjusting said acute angle.

3,835,590

CONTACT LENS EDGE MODIFYING MACHINE

Jacob Hoffman, 670 Waring Rd., Memphis, Tenn. 38122

Filed Feb. 12, 1973, Ser. No. 331,955
Int. Cl. B24b *13/00*
U.S. Cl. 51—105 LG **2 Claims**



An improved contact lens edge modifying machine including structure for positioning the lens to a first position wherein the anterior part of the lens is polished, to a second position wherein the apex part of the lens edge is polished, and to a third position wherein the posterior part of the lens edge is polished. The machine includes a peculiar polishing wheel which has three lens engaging surfaces adjacent the periphery thereof and which are angularly displaced one from the other to respectively engage the anterior, apex, and posterior parts of the lens edge when the structure for positioning the lens is selectively moved to the first, second, and third positions.

3,835,591

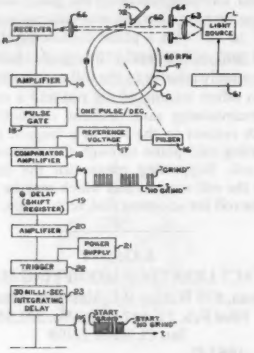
METHOD AND APPARATUS FOR CORRECTING DIMENSIONAL VARIATION IN A ROTATING TIRE

Francis J. Cimprich, Canton, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

Filed May 14, 1973, Ser. No. 359,739
Int. Cl. B24b *49/06, 49/12*
U.S. Cl. 51—106 R **12 Claims**

The method and apparatus for reducing the radial run-out of a rotating tire by grinding or cutting from the tread a portion thereof as determined by noncontacting optical inspection system which provides an electrical signal proportional to the amount of radial run-out, which controls such grinding or cutting. A jet air stream is cooperative with the inspection

system to assure a true signal is received unaffected by the heat generated by the grinding or cutting operation. The elec-



trical signal from the inspection system is fed to a comparator which compares the signal with preset limits and thereafter can control the grinding or cutting operation.

3,835,592

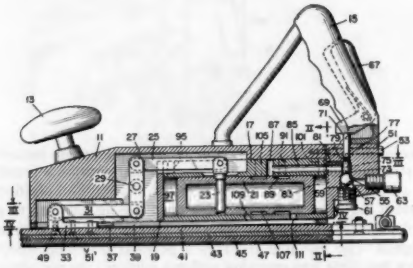
MECHANISM FOR DRIVING RECIPROCATING TOOL

Kunio A. Sumida, Los Angeles, Calif., assignor to Leonard U. Shapiro, St. Paul, Minn.

Continuation-in-part of Ser. No. 84,786, Oct. 28, 1970, abandoned. This application Apr. 13, 1972, Ser. No. 243,610

Int. Cl. B24b *23/04*

U.S. Cl. 51—170 TL **21 Claims**



A reciprocating, air-driven mechanism comprising, in one embodiment, a center-seeking piston connected to an oscillatably pivoted linkage which drives a material working tool. Air is delivered to the opposite ends of the piston at different stages of its reciprocation through the use of peripheral grooves on the piston and selected passages in the surrounding cylinder. An operator-actuated valve includes passages through which air may initially be delivered to one end of the piston so as to move it off center when operation of the tool is initiated. In a second embodiment, the air may be delivered to the piston by means of a single valve which is actuated by a piston-driven system to alternately communicate each piston-end with incoming and exhaust air passages. In either embodiment, as the piston is reciprocated, air exhausted from the non-driving end of the piston flows between a bearing plate and a shoe bar to create an air bearing and to pressurize the interior of the tool to prevent contamination thereof by particles of the material upon which the tool is working.

3,835,593

APPARATUS FOR DISPLACING GRINDING SURFACE OF THROW-AWAY TIP

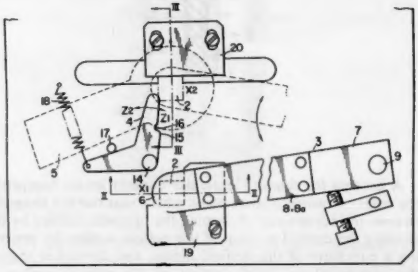
Junnosuke Yamashita, and Hideo Negishi, both of Tokyo, Japan, assignors to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Nov. 17, 1972, Ser. No. 307,632

Claims priority, application Japan, Nov. 20, 1971, 46-92728

Int. Cl. B24b *41/06*

U.S. Cl. 51—216 ND **7 Claims**



Apparatus for displacing grinding surfaces of a throw-away tip provided on the grinding table of a grinding machine having as its principal components: a feeding arm, an indexing pawl, and pushing device, all being inter-related to carry forward and backward as well as to place the throw-away tip between and at the feeding and grinding positions by the reciprocating movement of the feeding arm.

3,835,594

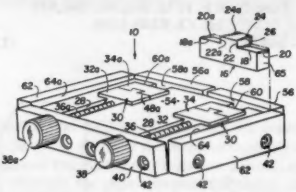
TOOLMAKER'S VISE

Eigard Szulman, 24 Osborne Rd., West Hempstead, N.Y. 11552

Filed May 23, 1973, Ser. No. 363,068

Int. Cl. B23q *3/02*; B24b *3/34*; B25b *1/24*

U.S. Cl. 51—220 **12 Claims**



A toolmaker's vise for clamping die sections between surfaces having predetermined angular positions to produce the desired cutting or rake angle on the die section when the same are subsequently worked upon by a cutting tool.

3,835,595

APPARATUS FOR ADJUSTING THE POSITION OF A FRONT COVER FOR A GRINDING WHEEL GUARD

Susumu Oshima, Okazaki, and Hidetoshi Takahashi, Kariya, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha Kariya-shi, Aichi-Pref, Japan

Filed , Ser. No. 267,080

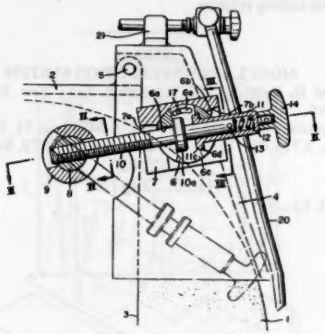
Claims priority, application Japan, July 29, 1971, 46-56903

Int. Cl. B24b *55/04*

U.S. Cl. 51—268 **4 Claims**

An apparatus for adjusting the position of a front cover for a grinding wheel guard comprises the front cover being pivotally

mounted by a hinged pin at the front upper part of the grinding wheel guard, a first revolving member being secured to the front cover with its axis in parallel relation with the hinged pin, a second revolving member being secured to the grinding wheel guard with its axis in parallel relation to the hinged pin, and an adjusting screw having a flange biased against one of the first and second revolving members and being connected



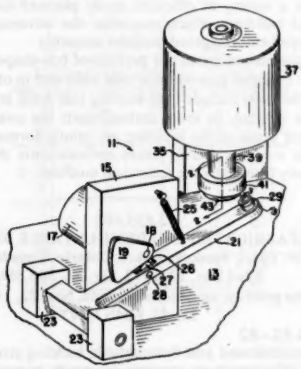
to the other of the first and second revolving members and to a handle. The first revolving member is connected to the front cover for limited relative rotation with respect thereto by a pin and slot arrangement, whereby upon movement of the first revolving member in the axial direction of the adjusting screw, the front cover is turned either in a clockwise or counterclockwise direction.

3,835,596

APPARATUS FOR AND METHOD OF REMOVING MATERIAL FROM A FLEXIBLE CONTACT LENS

Richard J. Wrue, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Aug. 10, 1972, Ser. No. 279,554
Int. Cl. B24b *1/00*
U.S. Cl. 51—284 **5 Claims**



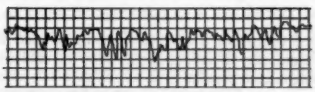
Apparatus for contouring the edge of a lens of hydrophillic hydrogel material while in its anhydrous state and secured or firmly supported in a lens mold. The lens, which together with the mold constitute an assembly, has an edge adjacent but inwardly spaced from the face of the mold. The apparatus includes a rotatable shaft which has a material removing surface in the form of a finely textured sphere secured to its free end. The lens and mold assembly is supported on the free end of a pivotable arm that is spring biased into engagement with a rotatable cam. Rotation of the cam permits movement of the arm between a first position where the lens and its supporting mold are spaced from the material removing surface and a second position where the edge of the lens is placed in engagement with the material removing surface and removed by abrading.

3,835,597

METHOD OF MANUFACTURING A HYDROPHILIC DAMPENING ROLL

Joseph J. Wasil, Parma Heights, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Nov. 24, 1972, Ser. No. 309,209
Int. Cl. B24b *1/00*; B41f *1/46*
U.S. Cl. 51—289 **1 Claim**



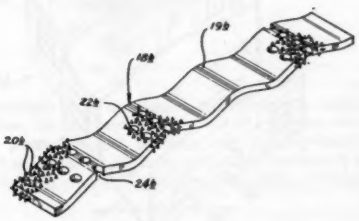
Method of manufacturing a hydrophilic roll in which a hard metal is ground during manufacturing to provide a polished finish, the finish measured to determine the number of peaks and valleys and grinding continued with a finer grinding wheel until the peaks and valleys which exceed 5 micro-inches from a center line for the peaks and valleys are less than ten per inch of length and those which deviate more than 2.5 micro-inch from the center line number less than 100 per inch. The roll is then treated to render it hydrophilic.

3,835,598

ABRASION TOOL

Alton E. Tobey, 2203 Mission St., Santa Cruz, Calif. 95060

Filed June 8, 1972, Ser. No. 260,996
Int. Cl. B24d *11/00*
U.S. Cl. 51—396 **1 Claim**



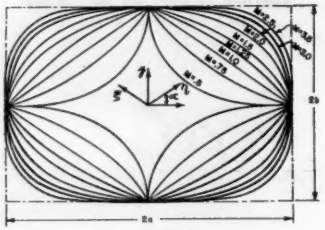
An abrasion tool for removing incrustation from the interior surfaces of passages, openings, and conduits such as the cooling passages through the exhaust manifold of a marine engine. The tool includes an elongated metal core that is both relatively stiff and flexible, and the core is provided therealong with a plurality of recesses adapted to receive therein incrustation loosened from the interior surfaces of such passage. Substantially all of the exposed surfaces of the core are covered or

coated with outwardly projecting abrasion elements in the form of grit (such as a metalic carbide) that is brazed, adhesively attached, or otherwise bonded to the core so as to be rigidly related thereto.

3,835,599
ROOF CONSTRUCTION

David H. Geiger, 788 Riverside Dr., New York, N.Y. 10032

Continuation of Ser. No. 80,048, Oct. 12, 1970, abandoned. This application Jan. 10, 1973, Ser. No. 322,531
Claims priority, application Japan, May 3, 1970, 45-37445
Int. Cl. E04b *1/345*
U.S. Cl. 52—2 10 Claims

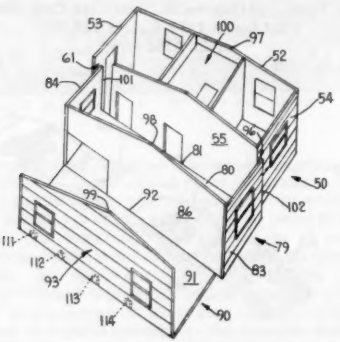


A roof comprises a ring conforming in plan to a closed curve, a plurality of sets of cables with the cables of each set extending in plan parallel to an axis of skewed symmetry of the closed curve, and a membrane attached to the cables which by means of inflation lifts the cables so as to pre-tension the roof and form a domed surface.

3,835,600
HOUSING PACKAGE DESIGNED TO BE CONVEYED BY ONE VEHICLE

Arthur H. Padula, Millburn, N.J.; William G. Meyer, St. Petersburg, and John V. Hollowell, Sarasota, both of Fla., assignors to American National Housing Corp., Newark, N.J.

Filed June 22, 1972, Ser. No. 265,323
Int. Cl. E04b *1/344*
U.S. Cl. 52—67 17 Claims

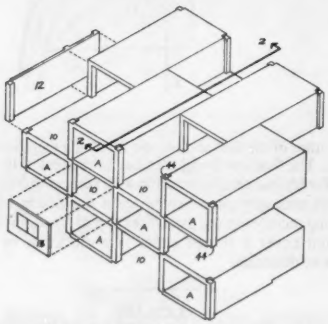


A mass-produced house designed to be nested and folded into a compact package for conveyance by one vehicle and unloadable therefrom as a nearly-completed house on the building site, and made of light but strong panels and floor bases, comprises a utility section having a floor base and including, in already-erected condition on the base, a long outer wall, a long inner wall, two shorter outer walls, and inner walls forming a kitchen, an adjacent bathroom, and an additional room adjacent the bathroom, and including necessary utilities. The package also includes a second section having a floor base and including, in already-erected condition on the base, a long wall and two shorter outer walls. The second section is designed to nest with the utility section with the shorter walls of both sections being disposed in overlying relation. The two sections are desirably hinged, and a third section may be added in nesting relation.

3,835,601
MODULAR CONSTRUCTION SYSTEM

Edward D. Kelbish, 280 Vanderbilt Ave., New York, N.Y. 11205

Continuation-in-part of Ser. No. 176,549, Aug. 31, 1971, Pat. No. 3,716,954. This application Jan. 10, 1973, Ser. No. 322,505
Int. Cl. E04g *1/04*
U.S. Cl. 52—79 17 Claims



A modular construction system which utilizes a plurality of preformed box-shaped modular units, which include a factory installation of all kitchens, bathrooms, closets, interior partitions, stairs needed for the proper functioning of the enclosed spaces.

These modular units are stacked in a predetermined manner to form a variety of efficient, easily planned multi-level residential buildings which maximize the advantages of both overlapped and staggered modular assembly.

In some embodiments the preformed box-shaped units have support columns cast with the side walls and in other embodiments the units include load-bearing side walls in the areas of the unit overlap. In some embodiments the overlapped and staggered areas of the building are jointly formed by the individual modules and in other embodiments the areas are separately formed by the individual modules.

3,835,602
PREFABRICATED AND DEMOUNTABLE BUILDING

Elmer W. Tuuri, Muskoka Lakes, Ontario, Canada

Filed Nov. 13, 1972, Ser. No. 306,366
Claims priority, application Canada, Nov. 22, 1971, 128257
Int. Cl. E04b *1/343*
U.S. Cl. 52—82 8 Claims

A prefabricated and demountable building structure is disclosed. The structure provides for ready transportation and quick and easy assembly and disassembly in a minimum of time without the necessity of having to provide various tools to assist in the erection or demounting. The unit consists of a floor assembly having a central floor disc and a number of floor segments which interlock with the disc and with adjacent floor segments. Wall segments which are generally rectangular in side view fit together to form a wall enclosure which interlocks with the floor assembly. A roof assembly consists of a

number of individual roof segments which interlock with adjacent roof segments and also interlock with the wall enclosure. The roof assembly is capped by a suitable vent or bonnet arrangement to hold all of the various roof segments in sturdy relationship. The vertical edges of the wall segments are provided with outstanding flanges which form a double flange to receive a wedge clamp to hold adjacent segments securely

together. The double flange increases downwardly in width to receive a tapering wedge clamp which is slid over the double flange. The roof segments are likewise provided with flanges on their side or radial edges which butt together to form a double flange with the double flange increasing in width inwardly to receive a tapering roof wedge clamp. A suitable door and/or windows may be provided in selected one of the various wall segments.

3,835,603

MEANS FOR COVERING THE ROOF-LIKE AREAS OF SUPPORTING STRUCTURES

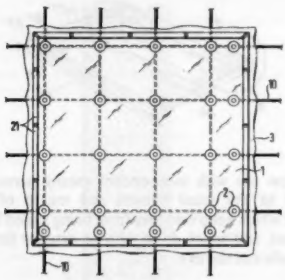
Fritz Schnebel, D-8201 Greimelburg 75a, Post Frasdorf, Germany

Filed Mar. 24, 1971, Ser. No. 127,631

Claims priority, application Germany, Apr. 3, 1970, P 20 16 089.8

Int. Cl. E04b *7/14*

U.S. Cl. 52—83 **8 Claims**



Means for covering the roof-like area of a supporting structure such as a stretched cable net comprising a plurality of juxtaposed spaced cover plates secured to the cable net or the like, a plurality of permanently flexible connector assemblies distributed over the surface area of the cover plates and securing the cover plates to the points of intersection of the cable net and permanently elastic sealing strips capable of giving in all directions and connected to the edges of the cover plates to provide a weather-tight seal between the cover plates.

3,835,604

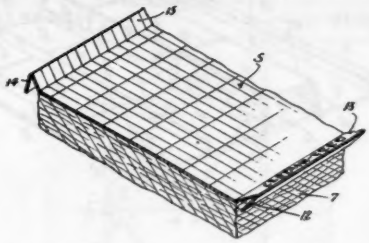
BUILDING INSULATION WITH DECORATIVE FACING

George A. Hoffmann, Jr., Wayne, Pa., assignor to Certain-Feed Products Corporation, Valley Forge, Pa.

Continuation of Ser. No. 106,084, Jan. 13, 1971, abandoned. This application Dec. 14, 1972, Ser. No. 315,015

Int. Cl. E04b *1/62*

U.S. Cl. 52—105 **8 Claims**



Building insulation comprising a strip of fibrous blanket with a facing sheet secured thereto, the facing sheet having nailing flanges or lip portions projecting beyond the side edges of the blanket strip to provide for mounting of the insulation upon spaced studs or other supports and further having a decorative pattern extended throughout a portion of the area of the sheet, the decoration being extended over one of the projecting lips, but the other projecting lip being undecorated and carrying name and/or instruction indicia.

3,835,605

PREFABRICATED WATER TANK

Chozaburo Ueno, Chiba, Japan, assignor to Kawasaki Steel Corporation, Kobe-shi, Hyogo-Ken, Japan

Continuation-in-part of Ser. No. 697,773, Jan. 15, 1968, Pat. No. 3,500,602, and a continuation-in-part of Ser. No. 3,796, Jan. 19, 1970, Pat. No. 3,629,985. This application July 6, 1971, Ser. No. 160,031The portion of the term of this patent subsequent to Mar. 17, 1987, has been disclaimed.

Int. Cl. E02d *27/46;* **E04h** *7/02*

U.S. Cl. 52—169 **2 Claims**

A lightweight water tank construction having side walls and a grid base, the grid base being formed of a plurality of connecting plates, channel members and capping members designed so as to allow the bottom structure to relatively shift to absorb forces created by ground swelling or water pressure.

3,835,606

COMBINATION CEILING TILE AND AIR DUCT STRUCTURE

Milton Liberman, 65 Seawane Rd., East Rockaway, N.Y. 11697

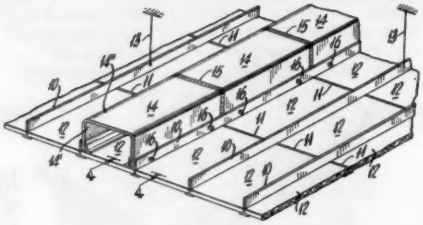
Filed May 22, 1972, Ser. No. 255,652

Int. Cl. E04f *17/08;* **F24f** *13/06*

U.S. Cl. 52—220 **17 Claims**

A heating and air conditioning duct system for installation in drop ceilings utilizing T-bar construction wherein ducts are

formed of a suitable insulating light weight material and secured to ceiling tiles to provide the completed duct which can then be placed in position on the T-bars as in the case of conventional ceiling tiles. Bends and reducing sections may



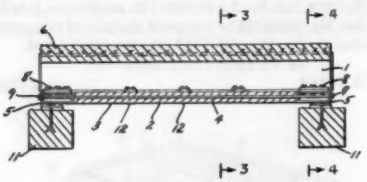
also be pre-fabricated so that the entire air distribution system can be installed in the course of installation of the ceiling and without the need for special sheet metal work which involves considerable time and expense.

3,835,607

REINFORCED GIRDERS OF STEEL AND CONCRETE

Norbert Raaber, Haupstrasse 87a, 8010 Graz-Waltendorf, Austria

Filed Apr. 13, 1972, Ser. No. 243,578
Int. Cl. E04c *3/293*
U.S. Cl. 52—223 3 Claims



The invention relates to a reinforced girder, in particular of steel and concrete, in which the concrete is prestressed to avoid cracks being formed therein due to tensile stresses. The invention also discloses a method for the production of such girders.

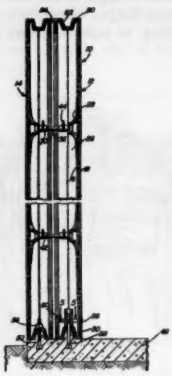
3,835,608

FIBERGLASS POUR-IN-PLACE FORM

Bobby G. Johnson, 1109 N. Elizabeth, Durham, N.C. 27702

Filed Feb. 2, 1972, Ser. No. 222,872
Int. Cl. E04b *2/40*
U.S. Cl. 52—426 6 Claims

A form including a pair of panels releasably connected to each other to define a cavity for receiving flowable and hardenable material with each panel constructed of glass fiber reinforced plastic material having any suitable finish surface on the exterior thereof with the panels including a reinforcing grid on the inner surface thereof for rigidifying the same. The panels are interconnected by tie rods detachably connected with the reinforcing members with the periphery of each panel including a channel by which the panel may be connected to a



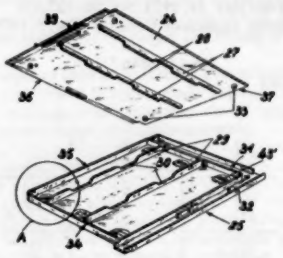
supporting structure or to other similar panels by employing a key member that is received in facing channels.

3,835,609

TILE AND MANUFACTURING PROCESS THEREFOR

Joseph Oscar, 84 Ave. de Paris, 78 Juziers, France

Filed June 20, 1972, Ser. No. 264,581
Claims priority, application France, June 25, 1971, 71.23206; Apr. 11, 1972, 72.12627
Int. Cl. E04d *3/35*
U.S. Cl. 52—478 3 Claims



A hollow tile with independent means permitting its attachment to the usual battens and means of mutual attachment which keep said tiles from being raised by the action of the wind, and which do so with no exterior fixation device such as nails and the like.

3,835,610

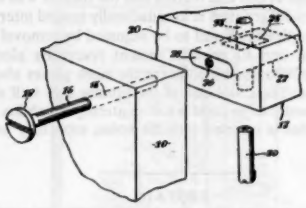
JOINT FOR JOINING STRUCTURAL MEMBERS

Ronald Ernest Harper, Monkton Combe, and Michael James Mole, Corsham, both of England, assignors to Arkana Limited, Bath, England

Filed June 28, 1972, Ser. No. 267,199
Int. Cl. F16b *12/24*
U.S. Cl. 52—755 11 Claims

Structural members are connected by a joining device which is attached to one of the members and has an insert part

projecting therefrom for insertion into a cavity in another structural member. The insert part has a shoulder arranged to lie within the cavity facing the first structural member, and a pin passes through an aperture in the second structural



member to abut with the shoulder to retain the insert part within the cavity. The pin preferably has a cross-section shape so as to urge the insert part further into the cavity on rotation of the pin. The device may be attached to the first structural member by screw means.

3,835,611

SOLID HEAT INSULATION PANEL FOR BUILDING

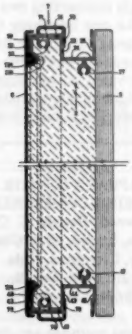
Jean G. Villeger, 95 Ave. du Grand Marin, Lesigny, France

Filed Nov. 12, 1971, Ser. No. 198,270

Claims priority, application France, Nov. 30, 1970, 70.42960

Int. Cl. E04b *2/28*; E04c *3/34*

U.S. Cl. 52—621 **4 Claims**



A structural heat insulation panel formed of a frame and two facings in which the frame comprises four profiles in the form of U-shaped members having a core perpendicular to the facings and two wings parallel to the facings and which includes a heat insulation and sealing joint having a central portion applied to the core for tightness and a forward portion applied to the front wing for heat insulation.

3,835,612

SCAFFOLDING

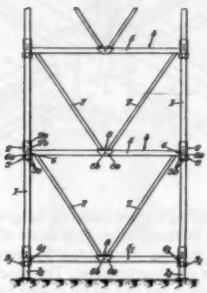
Bernard Beziat, Carrieres-sur-Seine, France, assignor to Societe Nouvelle Des Echafaudages Tubulaires Mills, Le Bourget, France

Filed Aug. 21, 1972, Ser. No. 282,147

Claims priority, application France, Sept. 16, 1971, 71.33431

Int. Cl. E04g *1/14*

U.S. Cl. 52—638 **12 Claims**



Load bearing scaffolding comprises uprights connected by bracing frames. Each frame comprises a cross-member releasably connectable to an adjacent frame.

3,835,613

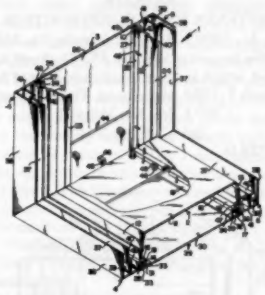
SIGN FRAME ASSEMBLY

David W. Davies, Jr., Leawood, Kans., assignor to Carter-Waters Corporation, Kansas City, Mo.

Filed Mar. 26, 1973, Ser. No. 344,881

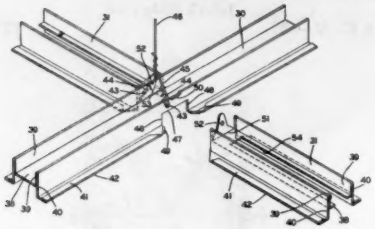
Int. Cl. G09f *13/04*

U.S. Cl. 52—656 **5 Claims**



A frame assembly for an internally illuminated sign having a low profile appearance and a minimum of exposed frame wherein the frame assembly includes a lower access frame member, a pair of laterally spaced side frame members, and an upper frame member each having a front and a rear retainer mounted thereon and adapted to receive and retain an edge portion of a respective display face therein. The lower, side, and upper frame members each have walls defining a front and a rear outwardly open recess each adapted to receive and engage a projection extending from a respective front and rear retainer. The lower, side, and upper frame members and the retainers thereon each have respective portions thereof substantially coplanar one with the other to define respective exterior edges of the frame assembly.

3,835,614
SUSPENSION SYSTEM
Lucien R. Downing, Jr., Avon Lake, Ohio, assignor to Donn Products, Inc., Westlake, Ohio
Filed Sept. 16, 1971, Ser. No. 181,121
Int. Cl. E04b 5/52
U.S. Cl. 52—666 2 Claims

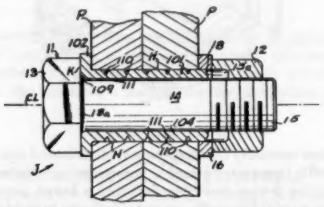


A suspended ceiling system includes flanged runners having exposed surfaces in planes other than those of the flanges, and may have such runners intersected by similar or different members to form a supporting grid. The spaces between runners or grid members are filled with ceiling panels or light fixtures which may be planar or non-planar shapes, such as recessed truncated pyramids.

Runners having recessed central planes are connected at intersections by lifting a vertical tongue into the space between folded metal sheets of the intersected runner and bending the tongue to lock the joint. Runners having projecting central planes are connected at intersections by cross-shaped inserts which may be weakened to accommodate excessive thermal expansion in case of fire.

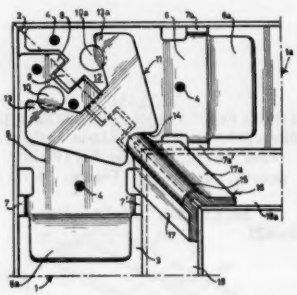
Special connecting clips are provided for joining dissimilar grid members and for joining the parts of truncated pyramid frames. Other clips are used to locate partition supporting channels.

3,835,615
FASTENER JOINT CONSTRUCTION
John O. King, Jr., 3990 N. Ivy Rd., Atlanta, Ga. 30342
Continuation-in-part of Ser. No. 33,281, April 30, 1970, abandoned, which is a continuation-in-part of Ser. No. 711,368, March 7, 1968, abandoned. This application July 3, 1972, Ser. No. 268,478
Int. Cl. F16b 5/00
U.S. Cl. 52—758 D 24 Claims



A joint assembly including work pieces with aligned holes of a prescribed diameter therethrough, a fastener in the holes and having a shank portion a prescribed amount less in diameter than the holes, and a metal sleeve member positioned between the shank portion of the fastener and the work pieces within the holes and in bearing contact with both the shank portion and the work pieces. The sleeve member includes a tubular side wall encircling the shank and substantially filling the space between the shank and the work pieces. The thickness of the tubular wall is nominally 0.008 or 0.016 inch. The metal sleeve member should preferably be made of a material similar in strength to that of the work pieces. For the high strength requirements of the aerospace industry the metal sleeve member should have a Brinell Hardness Number of at least 60 and/or a yield strength in excess of 20,000 p.s.i. The sleeve member may also be provided with a outwardly extending head flange at one end thereof and the tubular wall may be circumferentially grooved at longitudinally spaced intervals to allow the length of the wall to be adjusted by removal of excess material and to provide sealant reservoirs along the length of the tubular wall adjacent the work pieces about the aligned holes. The distal end of the tubular side wall may be tapered inwardly to provide a self-centering capability as the sleeve member is inserted into the holes, especially in interference.

3,835,616
SEAL JOINT BETWEEN TWO IDENTICAL PROFILED SECTIONS AND THE ASSOCIATED MITRE-JOINT CONSTRUCTION
Gijsbertus L. Van Wieringen, Amersfoort, Netherlands, assignor to N.V. Nederlandse Metaalindustrie Polynorm, Bunschoten, Netherlands
Filed Oct. 26, 1972, Ser. No. 301,217
Int. Cl. F16b 3/00
U.S. Cl. 52—758 H 4 Claims

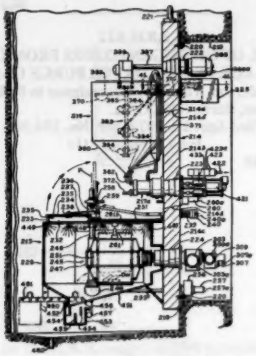


A method for sealingly connecting two identical sections of a door frame or the like one adjoining the other at a mitre-angle of 45°, the clamping means for drawing the adjoining flanges of the profiled sections one to the other being clamped between abutments provided on said flanges and the webs of the profiled sections adjoining each other at the mitre-joint, a part of said clamping means extending over the webs.

3,835,617
METHOD AND APPARATUS FOR FILLING AND CLOSING CONTAINERS
Arthur J. Stock, Lakewood; Donald E. Christofer, Willowick, and Joseph E. Brinza, Euclid, all of Ohio, assignors to Stock Equipment Company, Cleveland, Ohio
Filed Sept. 20, 1971, Ser. No. 182,088
Int. Cl. B65b 3/00, 55/24, 29/00
U.S. Cl. 53—21 25 Claims

Systems, apparatus and methods are disclosed for disposing of radioactive waste materials by placing them into a container such as a steel drum, together with cement or other solidifying agent and water or other suitable liquid in amounts sufficient to provide eventually a solidified mixture of predetermined amounts of cement or other solidifying agent and radioactive material, closing the drum, agitating the mixture in the drum for mixing the contents, and then storing the drum for at least a period of time sufficient to permit partial decay of radioactive materials or to await available time for shipment. Also disclosed are remotely controlled apparatus

for handling both empty and filled drums, for placing the drums in and removing drums from enclosed drumming equipment where they have been filled and agitated, for accurately placing the drums containing radioactive material in storage,



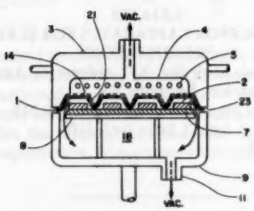
and for removing the drums from storage and loading them on a vehicle for transportation. All of these operations are done by remote control with a high degree of safety to the operators and maintenance personnel from radiation and freedom of the ambience from radiation pollution.

3,835,618

APPARATUS FOR PRODUCING VACUUM SKIN PACKAGES IN MULTIPLES

Richard Russell Perdue, Greer, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Jan. 22, 1973, Ser. No. 325,295
Int. Cl. B65b *31/02*
U.S. Cl. 53—112 A **4 Claims**



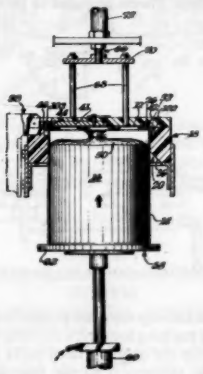
Thermoplastic film is drawn by differential air pressure against a multiplicity of concave interior surfaces of the upper portion of a vacuum chamber; the film is then heated by surface contact; then, after evacuation of the chamber in which has been placed a multiplicity of products spaced upon a backing board, differential air pressure is used to blow the film down over each of the products and against the backing board completely around each of the products thereby sealing the film to the board; and, subsequently, the board and film are cut to provide a multiplicity of individually sealed, vacuum skin packages. By this method and apparatus the prior art problem of "draping" and "webbing", i.e., the failure of the film to contact the board or seal to itself between relatively tall, adjacent products, is eliminated.

3,835,619

APPARATUS FOR ASSEMBLING TUBULAR CARTONS

Howard Reisman, c/o J. Reisman & Sons, Inc., Rt. 130, Pennsauken, N.J. 08110

Continuation-in-part of Ser. No. 302,264, Oct. 30, 1972, , and a continuation-in-part of Ser. No. 328,479, Jan. 31, 1973,.
This application Aug. 29, 1973, Ser. No. 392,476
Int. Cl. B65b *7/28*
U.S. Cl. 53—138 R **22 Claims**



The lids of tubular cartons are assembled and secured into the ends of paperboard tubular cartons by disposing them in a recessed block against a prominent surface which is spaced from the sidewalls of the recess by an annular groove. Tabs, provided on the lids, engage into notches extending from the recess into the wall of the block to maintain the peripheries of the lids evenly spaced within the annular groove. When the tubular walls are pushed into the annular groove around the lids, the tabs are inwardly deflected through the notches within the walls. The tabs are secured to the walls by power-operated staplers which react against anvils disposed within the prominent surface. The block has its recess facing up in a manual form of the apparatus for assembling the first lid within the walls. The lids are manually laid on the prominent surface with their tabs inserted in exposed notches, before manual insertion of the tubular wall around it. The staplers are actuated by microswitches in the base of the annular groove contacted by the leading edge of the tubular wall. The second or carton sealing lid is assembled by a substantially automatic version of the apparatus in which the block is inverted with its recess facing down. The filled cartons are fed upwardly upon a pneumatically operated elevator. Lids are previously inserted within the recess from a lid storage magazine by a reciprocating carriage which pushes against the tabs of the lids to successively slide them through a slit in the side of the block against the prominent surface.

3,835,620

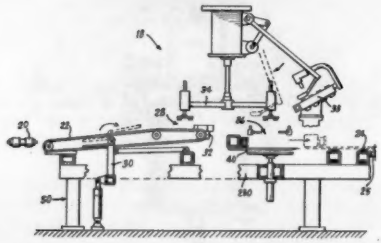
APPARATUS FOR STACKING PANELS OR THE LIKE

Duane A. Boltz, East Brunswick, N.J.; James J. Gardner, Hamilton, and Charles F. Hautau, Oxford, both of Ohio, assignors to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Jan. 2, 1973, Ser. No. 320,662
Int. Cl. B65b *35/50, 35/56*
U.S. Cl. 53—157 **10 Claims**

Apparatus for automatically stacking metal siding panels for packaging, with successive panels in the stack inverted and/or laterally offset relative to each other so that their formed longitudinal edges are interfitted, and with protective sheets of paper interleaved between successive panels. The apparatus includes a conveyor for advancing the panels laterally, a plurality of heads with rotary arms movable into and out of a posi-

tion for engaging and inverting panels advancing along the conveyor;, rotatable stop members at the end of the conveyor for arresting an advancing panel in any selected one of a plurality of positions spaced slightly apart from each other, and a plurality of indexing arms for successively gripping each arrested panel by suction and advancing it a fixed distance to a stacking locality where the indexing arms deposit the panels in parallel superposed relation, so that successive panels in the stack are laterally offset in correspondence with the spacing between the positions in which they are respectively arrested by the stop members. Sheets of paper to be interleaved with



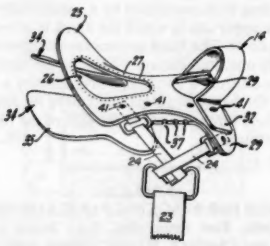
the panels are successively supplied to, and held on, a vacuum table adjacent the stacking locality; a movable wand operating in synchronism with the indexing arms picks up a sheet from the vacuum table, conveys it to the stacking locality, and deposits it on the uppermost panel at that locality, i.e. between deposit of successive panels on the stack. Successive adherence of the paper to the vacuum table and the wand, and release of the paper from the table and the wand, are effected by the reversible application of suction and air blasts to the paper through the table and the wand. Means are also provided for depositing a completed stack of panels on a carton blank and folding the blank around the panels.

3,835,621

SADDLE CONSTRUCTION, SEAT MEMBER FOR USE THEREIN, AND METHOD

Matthias Gorenschek, 2784 Foothill Rd., Santa Barbara, Calif. 93105

Filed Aug. 14, 1972, Ser. No. 280,191
Int. Cl. B68c *01/02*
U.S. Cl. 54—44 **10 Claims**



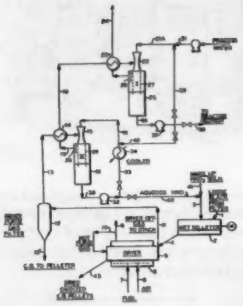
A saddle with a flexible saddletree contained therein having a sheet-like seat member and having resilient padding on the underside allowing a continuous conforming fit to the back of a horse as the back of the horse changes shape due to muscle movement while the horse is in motion. The saddle has a pommel-like member in the forward portion and the rear of the seat is moved forward to provide a straight line dimension from the rear of the seat to the lower rear of the pommel-like member in the range of 8 to 14 inches. The forward portion of the seat is generally at the level of the seat, and in no event more than 1 ½ inches above the seat level. The shortening of the seat places a rider forward and the lowering of the forward portion of the seat removes the tendency for the rider to slide backward. The rider position is stabilized over the horse's withers without the necessity for an upper chest strap and the rider is placed in a position of minimum vertical motion when the horse is in motion.

3,835,622

REMOVAL OF NITROGEN OXIDES FROM CARBON BLACK PELLET DRYER PURGE GAS

Eulas W. Henderson, Toledo, Ohio, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 27, 1973, Ser. No. 354,982
Int. Cl. B01d *53/14*
U.S. Cl. 55—48 **4 Claims**



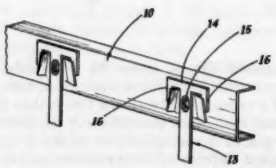
A combination of steps for removing nitrogen oxides from carbon black pellet dryer purge gas which, upon filtration, is scrubbed first with aqueous nitric acid solution and then with process water, the liquids being admixed, preferably, with aid of a jet venturi mixer and also in one modification the purge gas being heat interchanged with vent gas from at least one of the scrubbers to cool the purge gas before it is contacted with the scrubbing medium.

3,835,623

ELECTRODE SUPPORT APPARATUS FOR ELECTRICAL PRECIPITATORS

Richard L. Kline, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Mar. 27, 1972, Ser. No. 238,247
Int. Cl. B03c *3/41, 3/86*
U.S. Cl. 55—148 **3 Claims**



An apparatus for supporting and electrically connecting a discharge electrode of an electrical precipitator, the apparatus comprising a support channel having a set of receiving tabs and in combination therewith an electrode hanger configured to be removably received by said tabs to electrically connect and support an attached electrode.

3,835,624

GAS TREATMENT APPARATUS

Leif Arne Ahlborg, Saltsjo-Boo, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Aug. 27, 1971, Ser. No. 175,655
Claims priority, application Sweden, Aug. 28, 1970, 11703/70
Int. Cl. B01d 47/04
U.S. Cl. 55—220 12 Claims

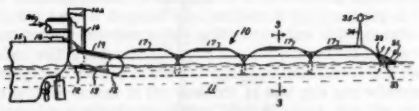
The gas to be purified is caused to flow upward in a vertical passage through a foam layer supported by perforated means situated in the gas passage. The perforated foam-supporting means comprises a conical element having open channels on its upper surface and forming openings for through-flow of the gas between these channels.

3,835,625

POLLUTION-REDUCING FLOATING EXHAUST

Cecil E. Williams, 334 Awini Pl., Honolulu, Hawaii 96825

Filed July 20, 1973, Ser. No. 381,260
Int. Cl. B01d 47/06
U.S. Cl. 55—259 14 Claims



An articulated floating exhaust stack trails behind a ship to cool exhaust and to remove particulated matter. Exhaust flows through a universal joint to multiple articulated sections and contacts water along the bases of the trailing sections. Water sprays within the sections cool and wash the gases. Baffles slow and lengthen flow. Waves clean channels, baffles, and filters.

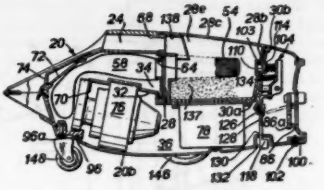
3,835,626

VACUUM CLEANER

Yuji Miyake; Hideo Kashiwara, and Jun Mizukawa, all of Hyogo, Japan, assignors to Sanyo Electric Co. Ltd., Osaka, Japan

Continuation of Ser. No. 806,974, March 13, 1969, abandoned. This application Nov. 4, 1971, Ser. No. 195,802
Int. Cl. B01d 50/00
U.S. Cl. 55—319 9 Claims

A vacuum cleaner including a two-stage filtering system positioned within a cleaner body for filtering the air before it passes through an electric motor fan unit. The two-stage filtering system comprises a first dust collecting receptacle having incorporated therein a filtering screen of a relatively large mesh size and detachably positioned within the cleaner body. The filtering system further includes a second filtering member of fine mesh size located immediately downstream of the first dust collecting receptacle within the cleaner body with its inlet opening communicating with the outlet opening of the first receptacle. Air with entrained dirt and dust particles taken into the cleaner body passes initially through the first receptacle where dust having a relatively large size is filtered from the air stream by the filtering screen and through the second filtering member where fine dust particles are removed from the air flow.

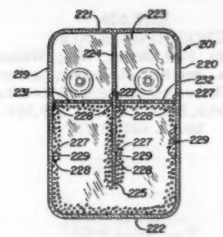


3,835,627

DISPOSABLE APPARATUS FOR CIRCLE ABSORPTION SYSTEM

Gale E. Dryden, Indianapolis, Ind., assignor to Dryden Corporation, Indianapolis, Ind.

Continuation of Ser. No. 131,873, April 7, 1971, abandoned. This application Jan. 31, 1973, Ser. No. 328,311
Int. Cl. B01d 53/04
U.S. Cl. 55—387 3 Claims



A circle absorption system for anesthesia, including a gas machine, a carbon dioxide absorbing canister, a gas supply hose thereto, rebreathing hoses and a mask connected thereto, absorbing medium therein, and a four way coupling having a pair of one way directional valves, a bleed valve and an outlet for receiving a rebreathing bag. The canister is rectangular in configuration and has recessed fittings for receiving the various hoses. The canister has a plate-groove arrangement whereby the size of chambers within the canister may be readily controlled while allowing quick and easy assembly of the canister.

3,835,628

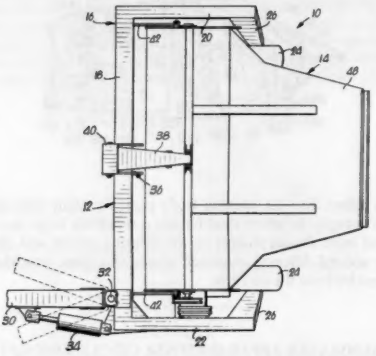
HEADER FRAME

Cecil L. Case, Newton, Kans.; Robert L. Elder, Yukon, Okla., and Ferol S. Fell, Hesston, Kans., assignors to Hesston Corporation, Hesston, Kans.

Continuation-in-part of Ser. No. 161,688, July 12, 1971, Pat. No. 3,716,972. This application Jan. 10, 1973, Ser. No. 322,412
Int. Cl. A01d 45/02
U.S. Cl. 56—14.4 11 Claims

A header support frame, universally adapted for use with ground-working and crop-handling headers of various kinds

and configurations, has a rearwardly opening, generally U-shaped main section supported above its ground-engaging wheels by virtue of a pair of rearwardly and inwardly inclined struts at the rearmost ends of each side beam of the section. The header selected for use is shiftably carried within the area

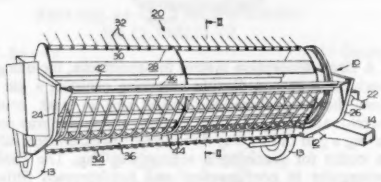


thus defined by the frame section, the struts, and the wheels by a power lift assembly projecting into the open area from a crossbeam at the forward end of the frame section. A horizontally swingable tongue is coupled with the section at the forward end thereof for attaching the frame and its supported header to a towing vehicle.

3,835,629
CROP CONDITIONERS

John R. Rosendahl, New Berlin, Wis.; Willard W. Lay, Stephenville, Tex., and Paul H. Harrer, La Porte, Ind., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 8, 1973, Ser. No. 339,319
Int. Cl. A01d *57/26*
U.S. Cl. 56—14.4 **4 Claims**

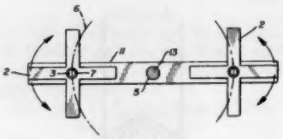


The invention relates to an agricultural hay harvesting machine of the mower-conditioner-windrower type having a main, wheeled frame extending in a fore and aft direction, a header subframe pivotally mounted on the main frame and including a header mounted on such subframe, a reel mounted over the floor of such header and wherein such floor has a sickle bar mechanism on the forward end thereof and a pair of cooperating crusher rolls mounted adjacent to the rear of such floor, a lean bar transversely extending across the forward end of the header, crop hold down and guiding tines attached to such lean bar and extending rearwardly between such reel and such floor to a position adjacent the bight of such crusher rolls for guiding crop material from such sickle bar to such crushing rolls.

3,835,630
ORBITAL PLANETARY MULTIBLADED REVOLVING CUTTER BLADES

Roland George Victor von der Au, P.O. Box 185, Halfway House, South Africa

Filed Nov. 6, 1972, Ser. No. 304,243
Int. Cl. A01d *55/18*
U.S. Cl. 56—295 **2 Claims**



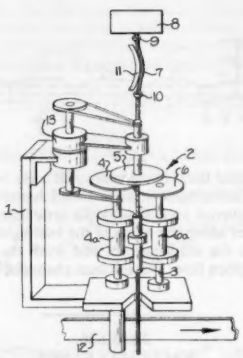
The orbital planetary multibladed revolving cutter blades are designed to be fitted to mowing and cutting machines, that mow or cut grass or vegetation, to provide an improved cutting action. Independant blade elements rotate past each other in a counter revolving direction.

Because the blades move in close proximity to each other a scissors action takes place, providing a better cutting action.

3,835,631
APPARATUS AND METHOD FOR TREATING THERMOPLASTIC YARNS

Heinz Schippers, Remscheid, Germany, assignor to Barmag-Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed Dec. 15, 1972, Ser. No. 315,545
Claims priority, application Germany, Dec. 23, 1971, 2164061
Int. Cl. D02g *1/02, 1/04*
U.S. Cl. 57—34 HS **8 Claims**



An apparatus for treating a thermoplastic, synthetic yarn at a high rate of production, whereby the treated yarn has a high degree of crimp resulting in an enhanced, uniform bulk throughout the length thereof. The apparatus comprises means for heating the yarn to a substantially plastic state, a friction-type false-twist unit positioned to receive the yarn in advance of the friction-type false-twist unit, a pin-type false-twist unit positioned to receive the yarn from the friction-type false-twist unit while at least a portion of the yarn remains plastic for imparting additional false-twist in the same direction as the false-twist inserted by the friction-type false-twist unit. This additional false-twist is applied between the friction-type false-twist unit and the pin-type false-twist unit

and the net twist inserted by the friction-type false-twist unit and the pin-type false-twist unit substantially equals the total twist desired to be applied to said yarn.

3,835,632
DRAW-TEXTURING APPARATUS

Takashi Kishida, and Masateru Terano, both of Mihara, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Oct. 23, 1973, Ser. No. 408,322
Claims priority, application Japan, Oct. 30, 1972, 47-107844
Int. Cl. D02g 1/02
U.S. Cl. 57—34 HS **7 Claims**

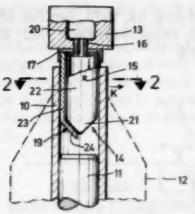
Undrawn filamentary yarns of thermoplastic synthetic fibers are drawn and false twisted, eliminating undesirable features such as short term flashes and non-uniformity of dyeability on the resulting yarns, by means of a draw-texturing apparatus wherein a pin is disposed at a position in the proximity of a yarn passage between a feed roller and a first delivery roller paired with a separate roller, so that the pin crosses the yarn passage and the axis of the delivery roller transversely and the pin is reciprocated in the direction of said axis and wherein means for positively preventing twist run-back into the upstream yarn passage beyond said first delivery roller is mounted.

3,835,633
GRIPPER FOR YARN CARRIERS AND THE LIKE

Konrad Klein, Ebersbach-Sulpach, Germany, assignor to Zinser-Textilmaschinen GmbH, Postfach, Germany

Filed Apr. 30, 1973, Ser. No. 355,873
Int. Cl. D01h 9/00; B66c 1/46
U.S. Cl. 57—52 **10 Claims**

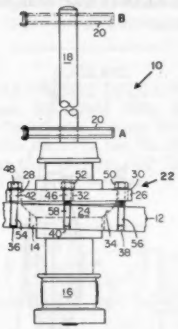
A gripper, installed on a gripper carrier, for gripping a yarn carrier (spool, bobbin and the like) is provided with a substantially rigid downwardly extending wall member having an exterior surface. The wall member is fixedly connected to a gripper carrier. The wall member, with a hollow element expandable under fluid pressure, can be inserted into the open interior of a yarn carrier. The external surface of the wall member forms a partial region of the circumference of the gripper. The hollow element is positioned adjacent the wall member and, in one embodiment, is formed in part by the wall member. Upon expansion of the hollow member under fluid pressure, the exterior surface of the wall and at least portions of the hollow member contact the interior surface of the yarn carrier.



3,835,634
SPINDLE MOUNTING

Gordon C. Anderson, Clemson, and Frank E. Brooks, Seneca, both of S.C., assignors to Saco-Lowell Corporation, Easley, S.C.

Filed Oct. 9, 1973, Ser. No. 404,833
Int. Cl. D01h 7/10, 7/08
U.S. Cl. 57—130 **11 Claims**



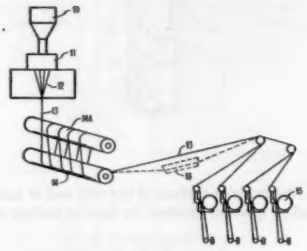
Disclosed is a spindle mounting means carried in part by the spindle rail in the form of a convex spherical seat surface at the spindle receiving orifice and more than two joining holes thereabout which are threaded, and in part by the spindle assembly in the form of an encircling mounting member rigidly fixed thereto having a complementary convex seat surface for abutment with the rail seat and a laterally extending flange extending outwardly from the seat, the flange having a similar number and spacing of joining holes which are not threaded but are of larger diameter than the joining holes of the rail, and a similar number of joining and fixing members in the form of bolts which are passed through the wider flange holes and threaded and tightened into the rail holes, whereby spindle plumbing using this construction is achievable within five to fifteen seconds versus five to fifteen minutes with prior art constructions.

3,835,635

BASTING THREAD WITH REDUCING SHRINKABILITY AND HIGH SOLVENT REACTIVITY AND METHOD OF PRODUCING THE SAME

Homer S. Myers, Santurce, P.R., assignor to Fibrex Corp., Humacao, P.R.

Filed Aug. 18, 1972, Ser. No. 281,957
Int. Cl. D02g 3/46; D02j 1/22; D01d 5/16
U.S. Cl. 57—140 R 4 Claims



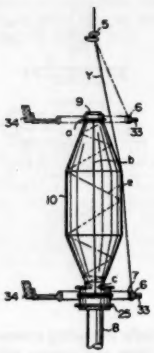
A polycarbonate basting thread which has high solvent reactivity to perchlorethylene and a reduced shrinkability when subjected to heat is disclosed. A process for manufacturing the thread is described.

3,835,636

PROCESS FOR WINDING SYNTHETIC YARN

Hajime Nakanishi, and Kohei Kawashima, both of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Nov. 6, 1972, Ser. No. 303,871
Int. Cl. D01h 9/02; B65h 54/86
U.S. Cl. 57—156 5 Claims



The present invention is to provide an improved yarn winding process in a drawtwister for drawing, twisting and packaging synthetic yarn, particularly a yarn winding process when the drawtwister is brought to a standstill.

When a package is completed and the drawtwister is to be stopped, a ring is moved to the uppermost end of a bobbin with a full package to wind irregular yarn occuring while the machine is being stopped. In this state the machine is temporarily stopped and thereafter rerun for a short time to lower the ring to a waste spool at the base of the spindle to wind the irregular yarn on the waste spool and the machine is completely stopped.

3,835,637

YARNS INCLUDING FIBROUS GLASS STRANDS AND METHODS OF THEIR PRODUCTION

Robert G. Russell, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 6, 1971, Ser. No. 205,041
Int. Cl. D02g 3/04, 3/18
U.S. Cl. 57—140 BY 3 Claims

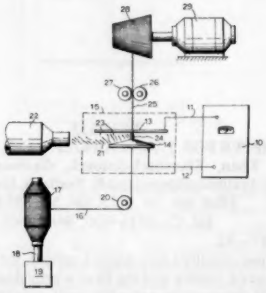
This invention relates to simple, novelty and combination yarns including base or core strands of fibrous glass filaments with integrated and texturized characteristics derived from successively cutting some or all of the filaments of the strands, twisting the strands and supplementally entangling other, preferably fibrous, elements or organic or inorganic nature such as paper, cotton, rubber, synthetics, glass, or asbestos with the base strands for bulking and covering the strands and adding diverse properties thereto, the elements being held to the strands by wrapping of the ends of the cut filaments and ends of cut filaments or strands of the added elements, and by extra size or binder applied to the full assembly of materials.

3,835,638

PROCESS FOR PRODUCING CORE YARN

Mayer Mayer, Jr., New Orleans; James I. Kotter; Harold L. Saloun, Jr., both of Metairie, and Roger S. Brown, New Orleans, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 132,953, April 12, 1971, Pat. No. 3,696,600. This application Mar. 15, 1972, Ser. No. 235,074
Int. Cl. D02g 3/36, 3/38
U.S. Cl. 57—144 1 Claim



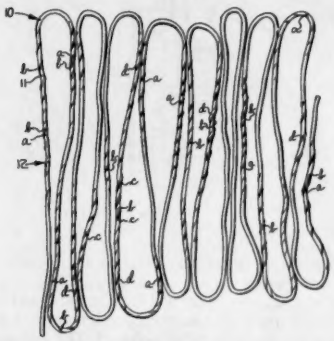
This invention relates to a process for the continuous formation of various types of core yarn. Specifically this invention relates to the use of electrostatic, physical and chemical means for producing a core yarn. More specifically, this invention relates to a process for electrostatically, peripherally sur-

facing or plating a coring element with individual fibers to produce a core yarn. Still more specifically this invention relates to a process for electrostatically, peripherally surfacing or sheathing a coring element with individual fibers and means for treating the coring element with a crosslinking chemical formulation to permanently set the yarn configuration.

3,835,639
METHOD OF MAKING NOVELTY YARN

Johnathan L. Rhyne, Lincolnton, N.C., assignor to Paul C. Rhyne and Joseph M. Rhyne, both of Lincolnton, N.C., a part interest to each

Division of Ser. No. 205,887, Dec. 8, 1971, Pat. No. 3,778,992. This application Nov. 1, 1973, Ser. No. 411,781
Int. Cl. D02g *3/34*; D01h *1/12*
U.S. Cl. 57—156 **7 Claims**

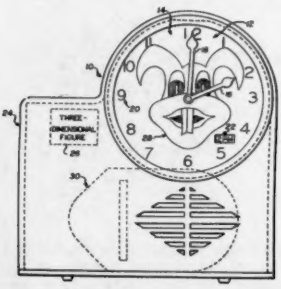


A method of making novelty yarn in which a plurality of slivers are formed into a composite strand by directing the slivers through at least one drafting zone concurrently with which a plurality of pretwisted auxiliary strands are fed into the drafting zone and are stretched and broken into relatively short varying lengths randomly arranged along the composite drafted strand, after which the composite strand is drafted and twisted to form a novelty yarn thereof.

3,835,640
TALKING ALARM CLOCK

Alexander W. Hughes, Jr., 19 Wardell Cir., Oceanport, N.J. 07757

Filed Oct. 9, 1973, Ser. No. 404,172
Int. Cl. G04c *21/28*
U.S. Cl. 58—14 **5 Claims**

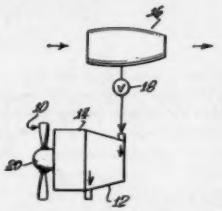


The method and apparatus for providing a wake-up alarm signal from an alarm clock having a face for displaying time indicia thereon and an identifiable character having an associated voice characteristic adjacent the time display wherein a prerecorded spoken wake-up message corresponding to and identifiable with this character for simulating a voice associated therewith as said wake-up alarm signal is provided at a preset time in response to the arming of an alarm circuit. This message may be repetitiveley provided until the alarm circuit is disabled. The message may be reproduced from a record by the engagement of the transducer, such as a needle, with a diaphragm. When the alarm circuit is disabled, a member on the alarm switch engages the diaphragm to disengage the contact between the diaphragm and the needle, the message can no longer be reproduced until such engagement is reestablished by movement of the switch to arm the alarm circuit. The needle is spring loaded to return to starting point of the message when the diaphragm is disengaged from contact with the needle.

3,835,641
RAM FLUID TURBINE

Joseph A. Goodrich, Torrance, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Sept. 28, 1970, Ser. No. 75,905
Int. Cl. F02c *7/02*; B64d *41/00*
U.S. Cl. 60—716 **4 Claims**

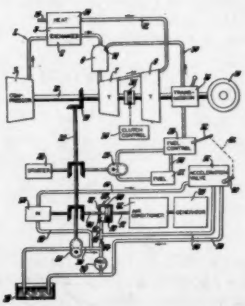


A ram fluid turbine is described which includes convenient means to check out performance of the turbine on the ground and/or to enhance its performance during operation.

3,835,642
GAS TURBINE UNLOADER

Charles A. Amann, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 20, 1972, Ser. No. 308,137
Int. Cl. F02c *3/10*, *7/02*, *7/32*
U.S. Cl. 60—39.16 R **3 Claims**



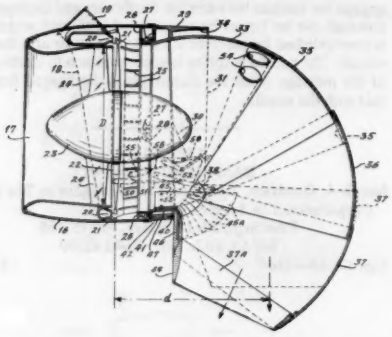
A gas turbine engine of a gas-coupled type suited for driving a vehicle has auxiliary devices such as an air conditioning compressor and a generator driven by the gas generator turbine. To facilitate acceleration of the gas generator and thus acceleration of the vehicle from idling or low power condition, these auxiliary devices are temporarily declutched from the engine during such acceleration.

3,835,643

NESTED TOROID NOZZLE APPARATUS

Horacio J. De Garcia, Jr., Maryland Heights, and Vincent H. Zimmerman, Olivette, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Nov. 21, 1972, Ser. No. 308,533
Int. Cl. F02k 1/20; B64c 15/08
U.S. Cl. 60—230 18 Claims



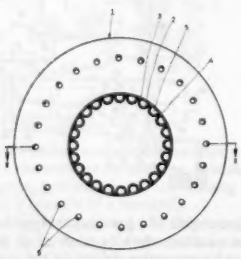
A nested toroid nozzle apparatus for vertical or short takeoff aircraft in which the source of power may be a turbofan, turbotip fan, or turbojet engine thrust unit housed in an aerodynamically clean nacelle. The nacelle also carries the nozzle components making it possible to integrate the continuity of lift and cruise thrust throughout the range required to convert from vertical lift to forward acceleration and into cruise flight. The nozzle components provide a close coupling between the thrust fan plane and the centerline of the downwardly vectored thrust. The nozzle components have a toroidal shape for maximum nozzle efficiency, compactness and lightweight, assumption of primary thrust loads in hoop tension, and diffuser designed for minimum pressure losses during the vectored lift mode and conventional cruise mode.

3,835,644

REGENERATIVELY COOLED ROCKET COMPUSTION CHAMBER AND THRUST NOVEL ASSEMBLY

Karl Butter, Munich, and Kuno Knauer, Moosach, both of Germany, assignors to Messerschmitt-Bolkow Blohm GmbH, Munich, Germany

Division of Ser. No. 123,535, March 12, 1971, Pat. No. 3,738,916. This application Mar. 15, 1973, Ser. No. 341,361
Claims priority, application Germany, Mar. 28, 1970, 2015024
Int. Cl. F02k 11/02
U.S. Cl. 60—267 2 Claims



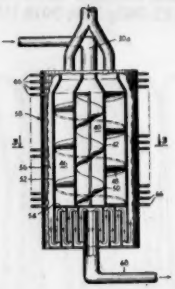
A rocket combustion chamber or thrust nozzle asembly having an inner layer of substantially uniform thickness which has a plurality of wall bridges or ribs and cooling channels or recesses on the outer surface thereof and an outer layer also of substantially uniform thickness secured to the outer surface of the inner layer.

3,835,645

METHOD AND SYSTEM FOR REDUCING POLLUTANTS FROM ENGINE EXHAUST

Jose C. Zoleta, 54 169th St., Elmhurst, N.Y. 11373

Filed Feb. 8, 1973, Ser. No. 330,754
Int. Cl. F01n 3/10
U.S. Cl. 60—274 5 Claims



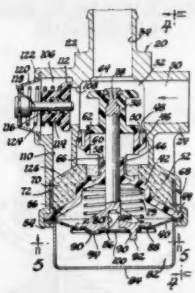
A method for eliminating pollutants in the operation of an internal combustion engine is disclosed. The engine is operated so that only enriched hydrocarbon and carbon monoxide pollutants are produced during engine operation, there being no nitrogen oxide produced. The hydrocarbons and carbon monoxide are then reacted with ozone to convert them to water and carbon dioxide. A system for eliminating pollutants in the operation of a vehicle also is disclosed.

3,835,646

AIR FLOW CONTROL UNIT

Ernst L. Ranft, Webster; Gordon R. Paddock, and Jeremiah J. Murray, both of Rochester, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 27, 1972, Ser. No. 301,619
Int. Cl. F02b 75/10; F16k 51/00
U.S. Cl. 60—290 10 Claims



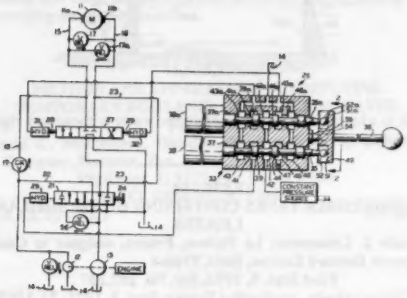
In a system for delivering air from an air pump to an exhaust system for an internal combustion engine, an air flow control unit has pressure relief and anti-backfire valves which divert some or all of the air flow away from the exhaust system and instead discharge it directly to the atmosphere. An annular silencing chamber is integrated within the air flow control unit housing and is provided with a needled polyester fiber felt to silence the noise of the diverted air flow.

3,835,647

MULTIPLE SPEED HYDRAULIC DRIVE CIRCUIT

Theron M. Huffman, Paw Paw, Mich., assignor to General Signal Corporation, Rochester, N.Y.

Filed Jan. 27, 1972, Ser. No. 221,343
Int. Cl. F15b 15/18
U.S. Cl. 60—486 10 Claims



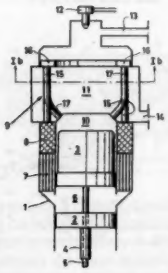
The disclosure concerns a hydraulic power circuit particularly suited for use in driving the elevator of an earth-moving scraper, and which affords three driving speeds in the forward direction and one driving speed in reverse. The circuit preferably employs two fixed displacement pumps of different capacities, and a pair of pilot operated control valves which selectively cause the output of either or both pumps to be delivered to the drive motor. The control valves are so arranged that they may be incorporated in a single, conventional valve body, and that neither has to be sized to handle the combined outputs of both pumps.

3,835,648

HEATER FOR HOT-GAS ENGINE

Anton Marie Nederlof, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 22, 1972, Ser. No. 308,766
Claims priority, application Netherlands, Dec. 11, 1971, 7117032
Int. Cl. F02g 1/06
U.S. Cl. 60—524 4 Claims



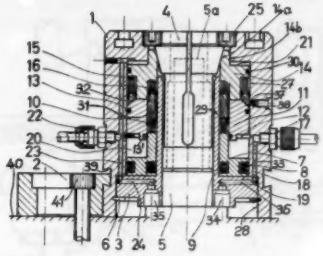
A hot-gas engine having a heater comprising at least one row of pipes arranged in a circle around a space for combustion gases, at least one pipe being wider than the remaining pipes in a radial direction of the circle.

3,835,649

HYDROPNEUMATIC CHUCK ACTUATING DEVICE

Claude Le Testu, 20 rue des Buttes, 74300 Cluses, France

Filed May 29, 1973, Ser. No. 364,245
Claims priority, application France, May 29, 1972, 72.19407
Int. Cl. F15b 7/00
U.S. Cl. 60—560 1 Claim



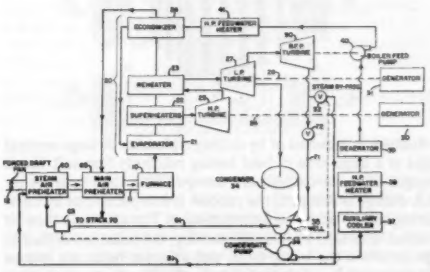
A hydropneumatic chuck-actuating device comprises a double walled tubular body with a central bore adapted to receive a chuck and an annular chamber defined between the walls of the body. The annular chamber is divided by a fixed annular piece into parts of different transverse cross-sectional area. Primary and secondary annular pistons are slidably mounted in the annular chamber about a hydraulic fluid, in a manner to multiply a pneumatic force applied on the primary piston into a greater force on the secondary piston which actuates closing of the chuck. Opening of the chuck is provided by simultaneously pneumatically acting on the two pistons.

3,835,650

STEAM AIR PREHEATER FOR A STEAM BOILER SYSTEM

Stephen Chesmejef, Lunenburg, Mass., assignor to General Electric Company, Schenectady, N.Y.

Filed May 3, 1973, Ser. No. 356,706
Int. Cl. F01k 7/44
U.S. Cl. 60—690 4 Claims



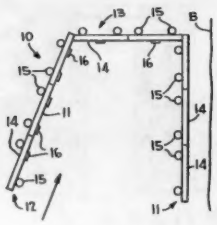
A steam boiler system includes a steam air preheater disposed in inlet ducting for preheating intake air. A boiler feed pump provides high-pressure water to a boiler which in turn produces steam to drive a main turbine. Exhaust flow from the turbine is routed directly to a main condenser, with the exception of a small extraction flow which is used to drive a boiler feed pump turbine. Prior to returning to the condenser, the boiler feed pump turbine exhaust is conducted through the steam air preheater. As system conditions demand, the boiler feed pump turbine exhaust is sent directly to the condenser without going through the steam air preheater.

3,835,651

LITTORAL FLOW TRAP OR BASIN

Arthur B. Butterworth, deceased, late of Smithfield, Va., and Roland A. McCoy, executor, Hampton, Va., assignors to Helen Libbey Butterworth, Smithfield, Va.

Filed Oct. 27, 1972, Ser. No. 301,514
Int. Cl. E02b *3/06*
U.S. Cl. 61—4 **5 Claims**



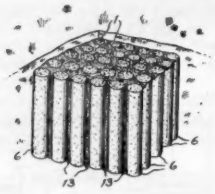
A littoral flow trap or basin designed to effect the build-up of a beach and to prevent future erosion, including interconnecting inshore and offshore bulkheads open to the littoral flow direction for trapping gravel material and the like therewithin.

3,835,652

RUBBISH DISPOSAL METHOD

Walter Hignite, N59 W 14272 Bobolink Ave., Menomonee Falls, Wis. 53051

Continuation of Ser. No. 95,060, Dec. 4, 1970, abandoned. This application Sept. 18, 1972, Ser. No. 289,765
Int. Cl. B65g *65/28;* **E02d** *15/00*
U.S. Cl. 61—35 **1 Claim**



Rubbish is disposed of by drilling a plurality of large vertical holes in a large area of land having relatively firm soil. Small charges of loose rubbish are dumped into each hole. After each charge is dumped, the rubbish is compacted, as by hammering and/or downward compression. The area may then be covered with soil. To provide stability, the holes are drilled to a point above the water table, and adjacent holes are spaced and separated by a substantial mass of soil.

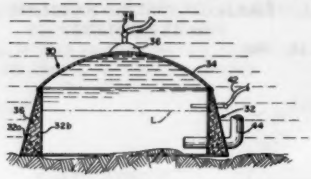
3,835,653

UNDERWATER STORAGE DEVICE

Charles M. Hix, Jr., Bryan, Tex., assignor to Arcadia Refining Company, Tyler, Tex.

Division of Ser. No. 879,653, Nov. 25, 1969, Pat. No. 3,675,427. This application Sept. 24, 1971, Ser. No. 183,712
Int. Cl. B65g *5/00;* **E02b** *17/00*
U.S. Cl. 61—46.5 **5 Claims**

An underwater storage device for storing fluids lighter than water wherein a tank is formed of a cylindrical wall having a top closure and an open bottom so that the fluids will enter into the tank and pass upwards toward the top closure. The tank is adapted to be positioned in the water without any rigid restraints.

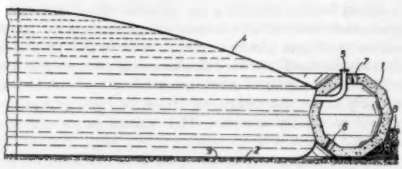


3,835,654

SUBMERSIBLE TANKS CONTAINING OIL OR SIMILAR LIQUIDS

Claude J. Lehanneur, Le Vesinet, France, assignor to Campenon Bernard Europe, Paris, France

Filed Sept. 8, 1972, Ser. No. 287,237
Claims priority, application France, Sept. 9, 1971, 71.32557
Int. Cl. B65d *89/06;* **B65g** *5/00*
U.S. Cl. 61—46.5 **15 Claims**



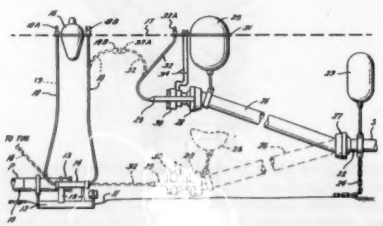
Tank for containing oil or a similar liquid, which is immersed in the sea. This tank comprises a ring of tore shape and hollow section, which lies on the ground, and at least one elastic membrane peripherally attached to the ring for delimiting the space where oil is introduced.

3,835,655

METHOD AND APPARATUS FOR CONNECTING SUBSEA FLOW LINES

John P. Oliver, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed June 27, 1972, Ser. No. 266,701
Int. Cl. F16l *35/00*
U.S. Cl. 61—72.3 **11 Claims**



Apparatus and method are disclosed for remotely joining two subsea flow lines, such as two portions of a subsea pipeline. One of the pipeline portions is generally laid prior to connection with the other pipeline portion and a first marker buoy detachably supports a tow line portion passing from the

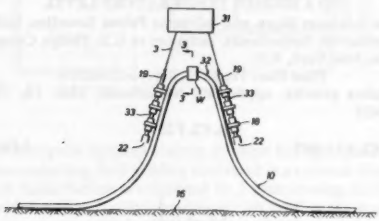
marker buoy, through a guide member mounted on an end of said one pipeline portion and back to the marker buoy. A second tow line portion is connected between an end of the other pipeline portion to be laid and a second marker buoy. During the pipeline connection operation, the tow line portions are connected together, the to-be-laid pipeline portion lowered in the water until adjacent the first laid pipeline portion, and the connected tow line pulled until the pipeline portions are joined. Mating parts of a remotely actuated collet connector are provided on the ends of pipeline portions to be joined, and these parts are guided into place during joining for providing a sealed connection.

3,835,656

METHOD AND APPARATUS FOR SUPPLYING TEMPORARY BUOYANCY TO AN UNDERWATER PIPELINE

David C. McDermott, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sept. 1, 1972, Ser. No. 285,945
Int. Cl. B63b *35/04*; **F16l** *1/00*
U.S. Cl. 61—72.3 **8 Claims**



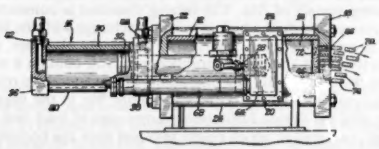
Temporary buoyancy is supplied to a submarine pipeline by connecting one or more sections of interconnected thin walled pipe members to a submarine pipeline such that a compressed gas may be supplied to the thin walled members enabling the net weight in water of combined pipes to be controlled to approximately zero. The compressed gas is ultimately replaced by water as a result of manipulations performed at the water surface.

3,835,657

CARBON DIOXIDE EXTRUDED PELLETS

John A. Scudder, Homewood, Ill., assignor to Chemetron Corporation, Chicago, Ill.

Filed Oct. 26, 1971, Ser. No. 192,138
Int. Cl. F25j *1/00*
U.S. Cl. 62—35 **1 Claim**



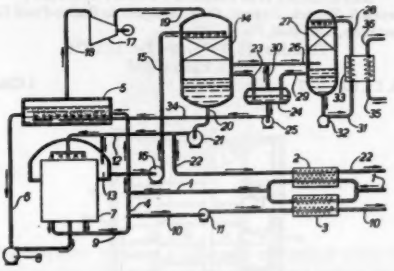
Apparatus for producing carbon dioxide extrusions such as pellets by flashing carbon dioxide liquid to form carbon dioxide snow and vapor in a chamber. A reciprocating piston in the cylinder compresses the snow material and extrudes compacted carbon dioxide snow through extrusion orifices at one end of the chamber. The chamber is constructed with openings in the lateral wall to permit part of the snow to be ejected therethrough into a snow retaining box, the snow in the box being employed as a porous filter to separate the vapor from the snow within the chamber.

3,835,658

FREEZE CRYSTALLIZATION OF SALINE WATER WITH A DIRECT CONTACT REFRIGERANT

John Henry Wilson, Stockport, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Jan. 31, 1973, Ser. No. 328,368
Claims priority, application Great Britain, Feb. 11, 1972, 6409/72
Int. Cl. B01d *9/04*
U.S. Cl. 62—58 **7 Claims**



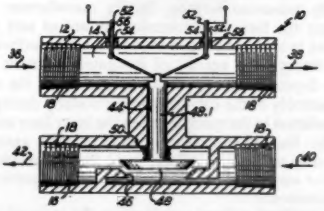
A method and apparatus for the desalination of saline water by freezing in which a mixture of ice and concentrated saline water is formed by cooling the saline water by heat exchange with an evaporating liquid refrigerant, the ice is separated from the concentrated saline water and melted, and at least a portion of the evaporated refrigerant is reliquified by heat exchange with an aqueous solution which is itself cooled by heat exchange with liquid methane or liquid natural gas.

3,835,659

THERMAL EXPANSION VALVE REFRIGERATION SYSTEMS

Lyle E. McBride, Jr., Norton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 16, 1973, Ser. No. 351,749
Int. Cl. F25b *41/04*
U.S. Cl. 62—202 **7 Claims**



This disclosure relates to a compact, reliable and inexpensive expansion valve for use in a refrigeration system. The valve has one passage to be arranged between the evaporator and the compressor of the refrigeration system and has a second passage to be arranged between the condenser and evaporator in the system. A valve member disposed in the second passage is spring biased to normally close that passage and a wire of a selected nickel-titanium alloy or the like is connected to the valve member and disposed in the first valve passage, this wire being adapted to abruptly contract in length for moving the valve member to open the second valve passage when the wire is heated above a selected transition temperature. A small electrical current is directed through the wire so that, when sufficient refrigerant has been released into the evaporator through the second valve passage, droplets of liquid refrigerant in the atmosphere moving from the evaporator to the compressor of the refrigeration system through the

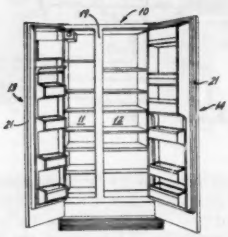
first valve passage cool the alloy wire and permit the noted spring bias to move the valve member to close the second valve passage. However, when no liquid droplets of refrigerant are present in the noted atmosphere, the alloy wire is heated to the noted temperature by the electrical current flowing through the wire, the wire then contracting in length for opening the second valve passage to allow more liquid refrigerant to enter the evaporator.

3,835,660

REFRIGERATOR CABINET CONSTRUCTION

Howard S. Franck, Oxford, Ohio, assignor to Philco-Ford Corporation, Blue Bell, Pa.

Filed Jan. 12, 1973, Ser. No. 322,976
Int. Cl. F25b *47/00*
U.S. Cl. 62—277 **3 Claims**



Refrigerator cabinet construction including an outer shell and a double compartment inner liner formed from a single sheet of thermoplastic material and having, in the general plane of the doors, a mullion provided between the two compartments and against which adjacent edges of the doors are adapted to seal. A portion of the hot gas line from the refrigerator condenser system extends along the rear surface of the mullion, between the adjacent side walls of the two compartments, to prevent condensation upon the exterior surface of said mullion by insuring that it is maintained at a temperature above the dew point of the ambient air. A strip of semi-flexible material of high magnetic permeability extends along the length of the mullion and has said dew point compensator tubing secured in high heat exchange relation with its rearwardly presented surface. During manufacture of the refrigerator the forwardly presented surface of said strip is maintained in intimate contact with the interior surface of the mullion through the agency of elongated magnetic means which is disposed adjacent the outer surface of the mullion during assembly of the cabinet, and particularly during foaming of insulation in the space between the inner liner and outer shell. The foamed-in-place insulation presses against the resilient strip and maintains it in good thermal relation with the interior surface of the mullion, after the magnetic means has been removed.

In the resultant cabinet construction the intimate contact between the strip of material of high permeability and the interior surface of the mullion insures high heat exhange relation between the dew point compensator tube and the mullion, the strip at the same time being available as an armature, permitting use of door sealing gaskets of the magnetic type.

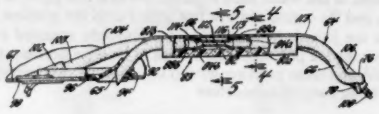
3,835,661

AUTOMATIC ICE MAKER WATER LINE WITH MENISCUS CONTROL

Donald P. Kochendorfer, and Charles C. Whistler, Jr., both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 20, 1973, Ser. No. 398,932
Int. Cl. F25c *5/18*
U.S. Cl. 62—340 **3 Claims**

A water supply conduit extending through the insulation of a refrigerator top wall with its outlet nozzle positioned above the freezing tray of an ice maker. The conduit has its intermediate generally horizontally disposed portion formed with a reduced tubular throat such that the receding movement of the meniscus of the liquid in the conduit stops at the



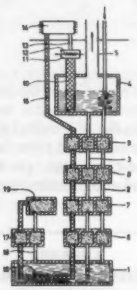
downstream side of the throat when the water line flow is shut off by valve means, to control the positioning of the water change and thereby prevent water drippage from the conduit outlet to obviate ice blockage of the line.

3,835,662

DEVICE FOR TRANSPORTING HEAT FROM A LOWER TO A HIGHER TEMPERATURE LEVEL

Frans Adrianus Staas, and Adrianus Petrus Severijns, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 14, 1973, Ser. No. 340,954
Claims priority, application Netherlands, Mar. 18, 1972, 7203659
Int. Cl. F25b
U.S. Cl. 62—467 **2 Claims**



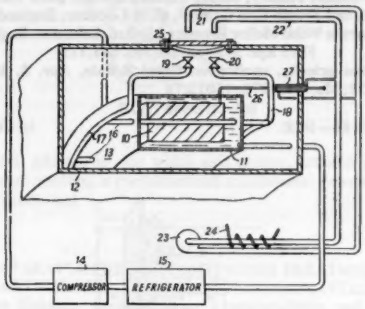
A device for transporting heat between two temperature levels which are situated below 1 °K, provided with a mixing chamber having an inlet duct for the supply of a medium flow consisting mainly of ^3He. The mixing chamber is connected, via a connection duct which is in heat-exchange with the inlet duct, to an evaporation reservoir. The mixing chamber, the connection duct and the evaporation reservoir contain a mixture of ^4He and ^3He during operation. The evaporation reservoir is provided with an outlet for mainly ^3He in the vapour phase, and the device furthermore comprises at least one superleak, one side of which opens into and near the bottom of the evaporation reservoir. Its other side communicates with a space provided with a heating device, the said space communicating, via a narrow duct and a cooler, with a duct in which a number of superleaks are arranged. Between the super-leaks heat-exchanging chambers are arranged which exchange heat with the connection duct and the inlet duct. The other end of this inlet duct opens into the upper part of a second mixing chamber. The first and the second mixing chamber are interconnected by a further connection duct which opens into the lower part of the second and into the upper part of the first mixing chamber.

3,835,663

SUPERCONDUCTING DYNAMO-ELECTRIC MACHINES

Anthony Derek Appleton, and Frank Tinlin, both of Newcastle Upon Tyne, England, assignors to International Research & Development Company Limited, Tyne, England

Filed Apr. 27, 1973, Ser. No. 354,985
Claims priority, application Great Britain, May 1, 1972, 20189/72
Int. Cl. F25b *31/00*
U.S. Cl. 62—505 2 Claims



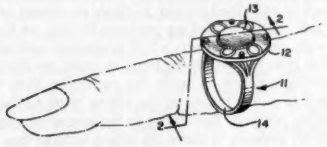
A homopolar dynamo-electric machine having a stationary superconducting field winding contained in a cryostat through which liquid helium is circulated by a main cooling circuit is provided with an auxiliary cooling circuit to allow the winding to operate at partial load in the event of failure of the main cooling circuit or of the vacuum insulation of the cryostat.

3,835,664

RING WITH MAGNETICALLY SECURED SHIM HELD BY ADHESIVELY SECURED MEMBER

Alice F. Nesbit, 725 Grove St. N., St. Petersburg, Fla. 33701

Filed Feb. 25, 1974, Ser. No. 445,810
Int. Cl. A44c *9/02*
U.S. Cl. 63—15.6 8 Claims



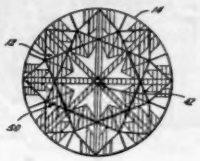
Means for reducing the diameter of a finger ring to produce a fit secure and comfortable for the wearer. The ring is fitted with a relatively flat member directly beneath the setting facing inwardly of the ring. This member may be constructed of a magnetic material or may be of a material such as iron which is attracted to a magnet. The member is secured by means of a suitable adhesive or by soldering or the like. In order to reduce the diameter size of the ring, a disc-like shim, which may be a magnet, is positioned on the underside of the secured member. The shim, is not adhesively secured but is secured to the member by magnetic attraction so that if the member is a magnet, the shim need not be, but can be of an attractable material. Shims of varying sizes may be employed so that the diameter of the ring may be modified over considerable reductions.

3,835,665

FACETED GEM WITH EMBEDDED MEANS FOR PRODUCING VARIABLE PATTERN

George Behrman Kitchel, 3801 Kirby Dr., Room 458, Houston, Tex. 77006

Filed Apr. 13, 1973, Ser. No. 350,919
Int. Cl. A44c *17/00*
U.S. Cl. 63—32 5 Claims



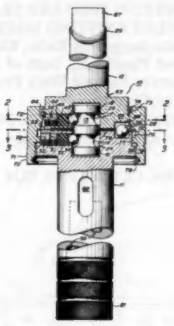
The invention includes a substance embedded within the faceted pavilion of a stone causing a dispersed pattern to appear in the faceted crown of the stone.

3,835,666

VERSATILE TOOL HOLDER

John T. Hoffman, 1604 E. Greenleaf St., Allentown, Pa. 18103

Filed Aug. 30, 1973, Ser. No. 393,075
Int. Cl. F16d *3/00*
U.S. Cl. 64—6 7 Claims



This invention is directed to a tool holder, which can be made both floating and rigid, for use vertically in a drill press, or horizontally in a milling machine or lathe. The novel tool holder provides for designs which allow for the feed pressure to exactly centralize with and equal the coupling pressure.

3,835,667

DOUBLE CARDAN UNIVERSAL JOINT WITH IMPROVED CENTERING MEANS

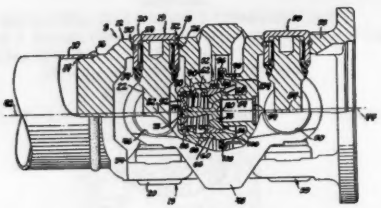
Kenneth K. King, Saginaw, and Robert L. White, Frankenmuth, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 12, 1973, Ser. No. 378,789
Int. Cl. F16d *3/26*
U.S. Cl. 64—17 R 5 Claims

A double Cardan universal joint has a centering means in which the ball seat is biased into engagement with the center-

ing ball with a constant spring force. Specifically, a movable ball seat is biased by a spring which reacts against a member which slides on the longitudinal axis of the yoke carrying the ball seat and which pivots on the yoke carrying the fixed centering ball about the centering ball center.

An improved sealing arrangement is also disclosed. Specifically, a synthetic rubber lip seal seals against the major diameter portion of an outer spherical surface on a sleeve carrying the ball seat. Such an arrangement removes the synthetic rubber lip seal from the heat generated by the centering ball and ball seat and minimizes the flexure of the lip seal during joint operation.



3,835,668

COMBINED KNITTING FEED AND TRANSFER FEED CIRCULAR KNITTING MACHINE

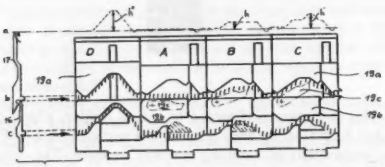
Alfred Schiebel, Rottenburg; Falk Kuhn, Kiebingen; Hermann Beuter, and Alfred Planck, Jr., both of Rottenburg, all of Germany, assignors to Fouquet-Werk Frauz & Planck, Rottenburg am Neckar, Germany

Filed Apr. 24, 1972, Ser. No. 246,651

Claims priority, application Germany, Apr. 22, 1971, 2119530

Int. Cl. D04b *9/06, 9/26*

U.S. Cl. 66—19 **9 Claims**



Both the cylinder and dial cam structures are formed with needle butt raceways defining respective needle curves, and are sub-divided into segments which are all of similar angular extent, some of the segments of the cylinder and dial cam structures being formed with raceways which provide for knitting feeds, and others with raceways providing transfer feeds; the segments are individually removably mounted on the machine, and the needle raceways in the segments are so arranged that the terminal portions thereof match adjacent raceways to permit selective interchange and placement of segments in accordance with desired knitting patterns; to provide for selective disabling of blanking or eliminator drums of Jacquard drum selectors, in both knitting feeds and transfer feeds, a pair of cam rings provide for mechanical index control of the pattern drum of the Jacquard selector, and electrically operated, solenoid controlled interlocks are provided to control indexing of the blanking drum, which can be done in accordance with a programmed pattern.

3,835,669

PATTERNING MECHANISMS FOR KNITTING MACHINES

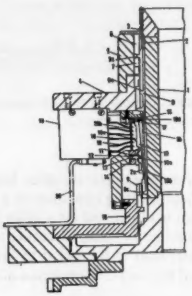
Peter Michael Findlay; Sidney Clifford Savage; John Michael Klee, and Joseph Eric Gamble, all of Leicester, England, assignors to Wildt Mellor Bromley Limited, Leicester, England

Filed Apr. 5, 1972, Ser. No. 241,115

Claims priority, application Great Britain, Apr. 8, 1971, 9132/71; May 14, 1971, 15072/71

Int. Cl. D04b *15/78*

U.S. Cl. 66—50 R **14 Claims**



The invention relates to patterning mechanisms for modified knitting machines. It particularly relates to patterning mechanisms in the form in which the needles are lifted by jacks having lifting butts movable between a position for engagement with a lifting cam at each feed station and a position for missing the lifting cams, the lifting butts being moved to cam-missing position by rocking pressers cammed outwardly on approach to each feed station, to cause retraction of the associated jack, and the rocking pressers having, or being associated with, patterning butts which cooperate with selectors which either miss the patterning butts to retain the lifting butts in cam-missing position, or strike the patterning butts to rock the pressers to cause return of the lifting butts to the lifting cam engaging position. According to the invention, the action to operate the pressers to move the lifting butts to cam-engaging position comprises a first motion in one direction parallel with the needles, and a second motion perpendicular to the needles to complete the operation of the pressers, one of said two motions being applied to the pattern butts by the selectors, and the other being applied to the pressers by a formation fixed relative to the lifting cam.

3,835,670

NEEDLE BED TRANSLATION CONTROL ASSEMBLY

Howard David Rogers, Westfield; John Charles Cariddi, Saddlebrook, and Henry Schaeffern, Pittstown, all of N.J., assignors to The Singer Company, New York, N.Y.

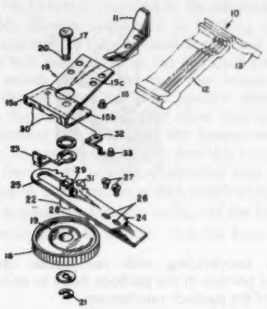
Filed Aug. 30, 1973, Ser. No. 393,083

Int. Cl. D04b *7/00, 7/20*

U.S. Cl. 66—69 **5 Claims**

A needle bed translation control assembly for a home knitting machine comprising a mounting bracket carried by

the needle bed, a dial cam with a cam groove therein, a link member fixed to the frame of the machine having a pin



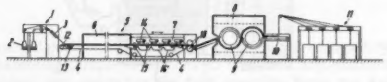
thereon adapted to ride within said groove, rotation of said dial cam resulting in predetermined translational movement of said needle bed.

3,835,671

APPARATUS FOR THE CONTINUOUS TREATMENT, PARTICULARLY DYEING, OF FIBROUS MATERIAL

Heinz Fleissner, Egelsbach near Frankfurt/Main, and Ernst Wilhelm, Ludwigshafen, both of Germany, assignors to Vepa AG, Riehen, Switzerland

Filed Mar. 27, 1972, Ser. No. 238,332
Int. Cl. B05c *9/14*
U.S. Cl. 68—5 D **17 Claims**



A process for the continuous treatment, particularly dyeing, preferably of essentially one-dimensional fibrous material which includes the steps of first impregnating the fibrous material with a dye-containing liquid, depositing the fibrous material in the dye-impregnated condition, onto a conveying means moving at a lower speed than the delivery speed of the fibrous material carrying the fibrous material by the conveying means into a heat treatment chamber, conducting the dye-impregnated material through a heat treatment chamber for the fixation of the dye, thereafter washing the fibrous material and optionally providing it with additives on the same conveying means, drying the fibrous material likewise in a dense and compact condition, and finally taking the fibrous material off for windup or orderly deposition. Also, an apparatus for carrying out this process is disclosed.

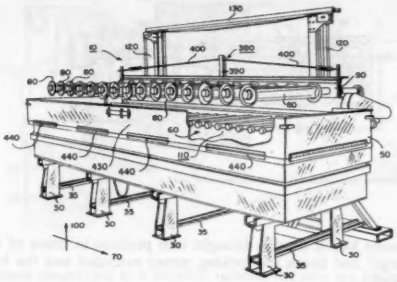
3,835,672

DYEING APPARATUS

Myron E. Leslie, Wayne, Pa., assignor to Hussong-Walker-Davis Co., Philadelphia, Pa.

Filed Mar. 16, 1972, Ser. No. 235,172
Int. Cl. B05c *8/02*
U.S. Cl. 68—206 **27 Claims**

A dyeing apparatus for dyeing skeins of yarn. Yarn skeins are mounted over reels which are rotatable through varying angular displacements. The reels are mounted to a reel frame which may be vertically displaced thereby elevating or lowering the yarn carrying reels. Spray mechanisms are mounted to a base frame below and parallel each of the reels for spraying dye liquid on the skeins. The spray pattern of liquid emitted from the spray bar mechanisms is controlled to a predetermined flow angle. A bending displacement mechanism adjusts for the weight of skeins positioned on the reels and maintains



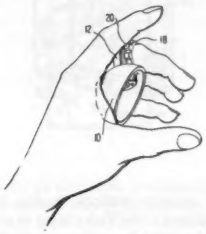
the reels in a horizontal plane after being loaded. A longitudinal inclination adjusting mechanism maintains the reel frame in a horizontal plane when the longitudinal loading of the reels is unbalanced.

3,835,673

ANTI-SKYJACK DEVICE

Sai Kheong Kwan, 14 Bukit Tunggal Rd., Singapore, Singapore

Filed Oct. 6, 1972, Ser. No. 295,553
Int. Cl. E05b *73/00*
U.S. Cl. 70—14 **7 Claims**



The invention relates to an anti-skyjacking device which is key-locked to both hands of an individual prior to boarding an aircraft with the key then being placed with that person's luggage and not accessible until arrival at the destination airport.

3,835,674

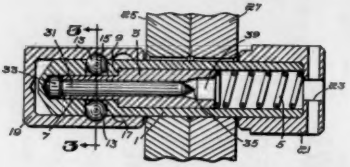
LOCKS

Richard Hoyt, Worcester, Mass., assignor to OMCO Inc., Holden, Mass.

Filed Apr. 20, 1973, Ser. No. 352,983
Int. Cl. E05b *67/36*
U.S. Cl. 70—34 **9 Claims**

This device is a bolt type lock for preventing tampering with gas and electric meters. A hollow body with a fixed head on one end has a cap held onto the other end by locking means held extended into the cap by a spring-loaded plunger retractible solely through a small round key hole in the head, to un-

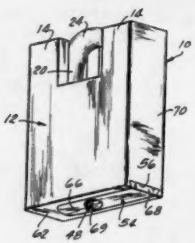
lock the lock. If any tool but the authorised key is used to pull the plunger, a piece that is normally left behind when the genuine key is used is brought into position in place of the plunger and keeps the locking means extended and the lock locked.



3,835,675
SECURITY PADLOCK

Guillermo W. Lippisch, Park Forest South, Ill., assignor to Junkunc Bros. American Lock Company, Crete, Ill.

Filed Mar. 23, 1973, Ser. No. 344,193
Int. Cl. E05b *67/02, 67/22*
U.S. Cl. 70—38 A 4 Claims



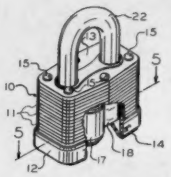
A maximum security padlock having a shielding plate recessed and retained in the lock casing to minimize exposure of the lock's replaceable key cylinder permitting only limited access to the key slot therein. The shielding plate is dovetailed into a complementary recess in the bottom of the casing and cooperates therewith to provide a flush, crevice-free padlock closure case around the lock mechanism. A pair of retaining members secure the shielding plate in the casing and accommodate release of the plate, to replace the key cylinder, only when the lock is in an unlocked condition.

3,835,676
LAMINATED PADLOCK BODY WITH INCORPORATED BAND-FORMING SLAB

Daniel J. Foote, Milwaukee, Wis., assignor to Master Lock Company, Milwaukee, Wis.

Filed Apr. 9, 1973, Ser. No. 349,398
Int. Cl. E05b *15/16, 67/04*
U.S. Cl. 70—52 6 Claims

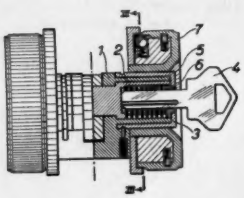
The major portion of the padlock body is formed of metallic laminations but a section of the padlock body in juxtaposition to a series of laminations is completed by a band-forming slab which projects slightly outwardly of the surfaces of the laminations to provide an annular bumper which may also carry identifying indicia. Portions of the slab are formed with openings cooperating with contiguous openings in the laminated portion of the padlock body to accommodate components of the padlock mechanism.



3,835,677
CYLINDER LOCK

Armas Kalervo Niilola, Maasalvantie 16 B 8, 00710, Helsinki, Finland

Filed Oct. 24, 1972, Ser. No. 300,297
Int. Cl. B60r *25/02*
U.S. Cl. 70—216 10 Claims



A cylinder comprising a lock case, a detent cylinder placed within the case and in this cylinder, plate-like detents, which directly or indirectly interlock the detent cylinder with the lock case until the key has been applied to shift them into the opening position, whereupon it is possible with reference to the lock case to turn the detent cylinder, which acts upon the lock bolt; and a cover sleeve placed upon the lock case. The cover sleeve is interlocked with the detent cylinder and the key is only used to move the detent plates into the opening position, whereupon the opening or locking action of the lock is accomplished by turning the cover sleeve, either indirectly or directly clockwise or counterclockwise any number of turns.

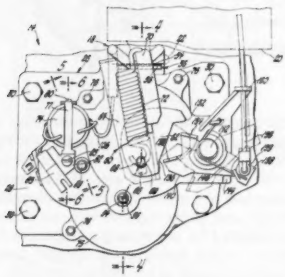
3,835,678
VEHICLE BODY COMPARTMENT PANEL PULL-DOWN MECHANISM

Barthold F. Meyer, Bloomfield Hills; Floyd I. Dully, Detroit; Bela Gergoe, Birmingham; Bohdan Kazewych, Union Lake, and Robert M. Hebert, Birmingham, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 29, 1973, Ser. No. 392,535
Int. Cl. E05b *65/19, 47/00, 15/02*
U.S. Cl. 70—241 5 Claims

A pull-down mechanism for a vehicle body compartment panel includes a housing mounted on the vehicle body and supporting a bolt keeper that is driven in a sequenced manner

between retracted and extended positions by a linkage connected to the output of a reduction gear drive train whose input is driven by a unidirectional electric motor. The sequencing of the keeper is provided by the cooperable action of a depressible plunger responsive to latching of a panel mounted bolt assembly to the extended keeper and to key unlatching of the bolt assembly from the retracted keeper so as to actuate a switch control member that initiates driving movement of the keeper to the other position, and by a cam rotatable with the output of the gear drive train to maintain the control member actuated until the keeper reaches the other position. The linkage includes a first link rotatable with the output of the gear drive train and having stop and undetenting surfaces. A combined stop and undetenting lever on the housing is engaged by the stop surface of the link to limit reverse movement of the drive train when the keeper reaches



retracted position and closes the panel, and is engaged by the undetenting surface of the link to actuate a bolt undetenting member that unlatches the bolt assembly from the keeper when the keeper is driven to extended position by actuation of a vehicle occupant compartment switch. A lost motion connection drives the cam with the output of the drive train and prevents a slight reverse movement of the drive train before the stop action of the link and lever occurs from reactuating the switch control member. An electrical grounding of a contact on the plunger to either the bolt assembly or the keeper allows normal operation of the pull-down mechanism but prevents initiation of the retracting movement of the keeper by manual depression of the plunger. A spring biased pin and slot connection of the linkage provides automatic adjustment of the keeper adjacent its retracted position so that full cycling of the mechanism is possible even if the panel cannot move all the way to closed position.

3,835,679

TIME CONTROL SAFETY LOCK FOR A SAFE OR THE LIKE WITH INDICATING MEANS OUTSIDE THE SAFE FOR INDICATING THE TIME CONTROL OF THE LOCK

Albert Heinemann, Scherzingen, and Wilhelm Opferkuch, Freiburg, both of Germany, assignors to Theodore Kromer KG, Freiburg/Br., Germany

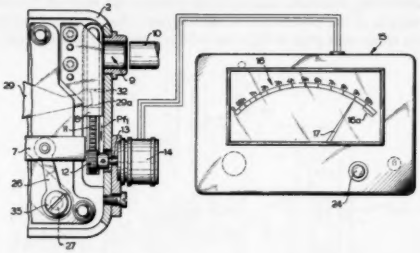
Filed Oct. 18, 1972, Ser. No. 298,786

Claims priority, application Germany, Oct. 20, 1971, P2152221

Int. Cl. E05b *43/00*

U.S. Cl. 70—271 **13 Claims**

Time control safety lock for a safe or the like in which a blocking member is withdrawn by a clockwork mechanism during a predetermined time period out of the path of a locking member to permit opening of the safe only after elapse of said predetermined time period, and in which signalling



means observable at a location outside the safe are provided to indicate the presence of the time controlled blocking member and preferably also the time period this blocking member will still remain in blocking position.

3,835,680

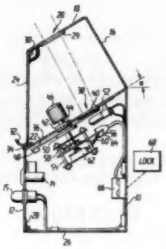
ELECTRONIC COMBINATION LOCK SELECTOR UNIT

Milton R. Evans, Annapolis, Md., assignor to Halliburton Company, Duncan, Okla.

Filed Jan. 4, 1973, Ser. No. 321,037

Int. Cl. E05b *49/00*; **H01h** *9/00*

U.S. Cl. 70—278 **8 Claims**



A selector unit for an electronic combination lock including a combination disc which may be selectively rotated to expose a selected digit and then depressed to provide an electrical signal indicative of that digit. The order of occurrence of the electrical signals is evaluated as the combination for lock operating purposes. The knob by which the disc is rotated and depressed is contained within an enclosure apertured to effectively shield the position of the disc from personnel other than the individual operating the lock. A hinge flap is provided for access to the knob and the enclosure effectively hides the movements of the individual's hand in rotating and depressing the disc.

3,835,681

CONTINUOUS ROLLING MILL

Charles Storer Shumaker, Glenshaw, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

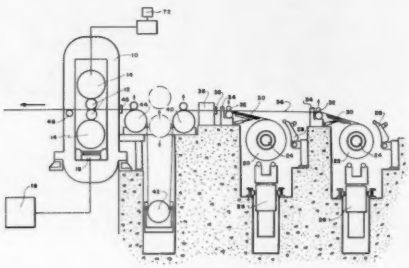
Filed Mar. 16, 1973, Ser. No. 341,815

Int. Cl. B21b *1/28*

U.S. Cl. 72—10 **8 Claims**

The disclosure of this invention relates to a rolling mill arrangement that will enable coils of strip to be rolled uninterruptedly for an indefinite period of time. It illustrates a pair of payoff reels for quickly feeding succeeding coils to a spot welder or stitcher for joining succeeding coils, the time

required to do this very rapid operation without interrupting the operation of the rolling mill being provided for by a single looper roller arrangement located after the welder and before the rolling mill. The mill includes a very rapid work roll separating hydraulic control that permits the weld or stitched portion of the two strips without being rolled to pass between the work rolls after which the rolls are quickly reset for rolling



and tension may be quickly reestablished. If the mill includes more than one roll stand, each stand is quickly opened to allow the weld or stitch to pass between the rolls and then close to commence rolling and tensioning of the strip. At the delivery end of the mill the weld or stitch may be cut out on the fly by a flying shear without interrupting the operation of the mill.

3,835,682

HYDRAULIC PRESSES

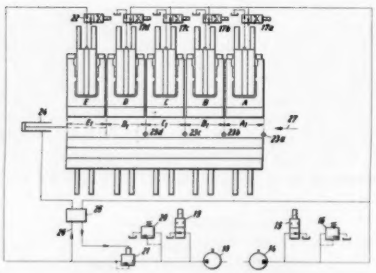
Ronald John Elger, Bournemouth, England, assignor to Mannesmann-Meer Aktiengesellschaft, Monchengladbach, Germany

Filed Sept. 21, 1972, Ser. No. 291,087

Claims priority, application Great Britain, Sept. 24, 1971, 44713/71

Int. Cl. B21j *9/20*

U.S. Cl. 72—14 **8 Claims**



Method and apparatus for controlling a hydraulic press having a row of hydraulic cylinder/ram assemblies for applying pressure in a workpiece of elongate form. The pressure of one cylinder/ram assembly adjacent one end of the workpiece is controlled in dependence upon the ratio of the length of the end portion of that workpiece over the length of the zone covered by that one cylinder/ram assembly.

3,835,683

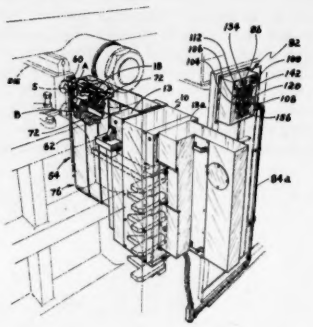
STOCK STOP CONTROL ASSEMBLY

Rudolph A. Bradick, 18609 St. A Clair Ave., Lakewood, Ohio 44770

Filed Jan. 5, 1973, Ser. No. 321,149

Int. Cl. B21b *31/34*; **B21j** *13/10*

U.S. Cl. 72—36 **15 Claims**



A compact stock stop control assembly for use in stock forming machines, such as for instance a metal upsetting machine, for positioning the bar or rod of stock material with respect to the work area or die area of the machine. The assembly comprises a support embodying elongated movable abutments mounted on the support with one end of each abutment being adapted for positioning a respective bar or rod of stock relative to the machine. A control panel, disposed remote from the support and movable abutments, is provided, with control mechanism for expeditiously positioning the movable abutments relative to the support, and thus providing for the remote control adjusting of the position of the stock stop abutments with respect to the work area of die area of the machine. Means are provided for locking the stock stop abutments in selected position, and means are provided for sensing the movement of the abutments and visually indicating on the control panel the distance that the stock stop abutments are positioned from the work area of the machine. The highly compact assembly is adapted for use in different types of stock forming machines, and the stock stop abutments thereof can be expeditiously controlled remote from the location of the actual stop stock abutment mechanism.

3,835,684

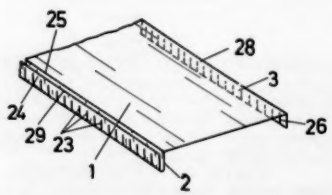
METHOD AND AN APPARATUS FOR MAKING TUBES

Walter Schwarz, 6020 Innsbruck, Innsbruck, Austria

Filed Feb. 16, 1973, Ser. No. 333,001

Int. Cl. B21c *37/12*

U.S. Cl. 72—50 **12 Claims**



An apparatus for forming tubes from a spirally wound metallic strip wherein one longitudinal border of the strip is bent on edge and the other border is bent to form a U-shaped

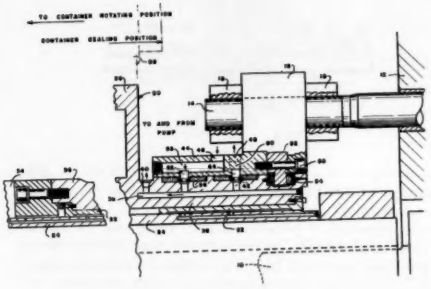
fold to receive the first border. The apparatus embodying a feeding device having cutting means to notch the longitudinal borders and associated therewith a guiding means for directing said strip to a plurality of rollers for compressing the longitudinal borders together.

3,835,685

CONTAINER COOLING SYSTEM FOR PRESSES

Francis J. Kent, Wallingford, and George M. Jaworski, Narberth, both of Pa., assignors to Wean United, Inc., Pittsburgh, Pa.

Filed May 10, 1973, Ser. No. 359,153
Int. Cl. B21c *23/00*
U.S. Cl. 72—263 **6 Claims**



The present disclosure illustrates a cooling system for an extrusion press having three containers for carrying heated billets, the containers being succeedingly positioned in a number of different stations incident to the operation of the press. In one of these stations, the containers are cooled after extrusion. This cooling is accomplished by supporting a non-rotating but axially movable cooling jacket on the central container hub that carries the containers. Special hose systems connected to the jacket carry the cooling water to and from each container, but it is only the container in the cooling station, if cooling is required, that is cooled. This is performed by providing a valve for each container which is carried by the rotatable containers and which is separately operated when in the cooling station.

3,835,686

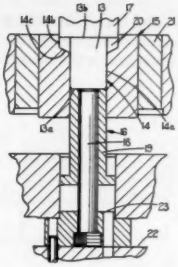
METHOD OF MANUFACTURING A STEEL COMPONENT HAVING A HEAD PART AND A HOLLOW SHANK PART

Ralph Leonard Joseph Lawson, and Zygmunt Jablonski, both of Birmingham, England, assignors to The Lucas Electrical Company, Limited, Birmingham, England

Filed Mar. 7, 1973, Ser. No. 338,946
Claims priority, application Great Britain, Mar. 28, 1972, 14410/72
Int. Cl. B21k *21/08*
U.S. Cl. 72—354 **8 Claims**

To manufacture a steel component having a head part and a hollow shank part, a steel slug is positioned in a die cavity having a narrow portion which defines the shape of the shank part of the required component. One end of the slug extends into the narrow portion of the die cavity and engages a first punch defining the shape of the bore in the hollow shank part, whereas the other end of the slug extends into a wide portion of the die cavity and engages a second punch.

The first and second punches are then caused to undergo relative movement towards each other so that the first punch enters the one end of the slug. As the first punch enters the slug, it produces the required bore for the shank part of the component and the region of the slug surrounding the first punch moves relative thereto substantially without constraint. Also, in entering the slug, the first punch causes metal to flow towards the other end of the slug and into the wide portion of



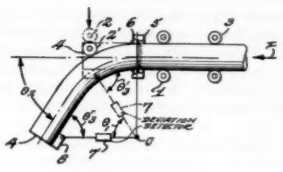
the die cavity, which is so dimensioned that the metal is not constrained to conform to the shape of the wide portion of the die cavity.

3,835,687

DEVICE FOR DETECTING A BEND ANGLE UPON PRECISELY BENDING A METALLIC PIPE

Satoru Kubota, and Yuji Morikawa, both of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 13, 1972, Ser. No. 288,667
Int. Cl. B21d *7/14*
U.S. Cl. 72—369 **2 Claims**



A device for detecting a bend angle upon precisely bending a metallic pipe to be used in a method for bending a pipe in which precise bending is achieved by detecting a deviation of a distance between one point on said pipe to be bent and a fixed point outside of said pipe from another distance between a predetermined locus and said fixed point by means of an arm having its opposite end portions pivotably supported at said one point and said fixed point respectively, characterized in that there is provided means for detecting a sum of a rotational angle of said arm about said fixed point as the bending proceeds since the beginning of the bending work and an angular variation at the portion of said arm joined to said pipe to obtain a true bend angle.

3,835,688

APPARATUS AND METHOD FOR SIZING HOLES

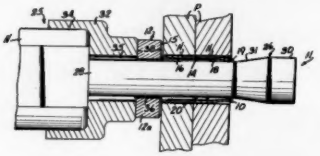
John O. King, Jr., 3990 N. Ivy Rd., Atlanta, Ga. 30342

Continuation-in-part of Ser. No. 268,478, July 3, 1972, which is a continuation-in-part of Ser. No. 33,281, April 30, 1970, abandoned, which is a continuation-in-part of Ser. No. 711,368, March 7, 1968, abandoned. This application Jan. 17, 1973, Ser. No. 324,485
Int. Cl. B21j *15/04*
U.S. Cl. 72—370 **20 Claims**

A method of sizing holes by enlarging holes through a workpieces with a mandrel and working through a seamless tubular member to enlarge the holes. The rebound of the tubular

member upon enlargement is less than the material of the workpieces and is left in the holes to limit the rebound of the holes. Also disclosed is the joint produced by the above method.

A device for sizing holes is disclosed which includes a mandrel with an expansion section which is forced through a seamless tubular member while held in the holes to enlarge both the



tubular member and the holes. A backup member is provided with an aperture therethrough of a diameter smaller than the inside diameter of the tubular member and which is enlarged by the mandrel simultaneously with the enlargement of the sleeve member. By providing different outside diameters and a constant inside diameter on the seamless tubular member, the workpieces may be enlarged different amounts.

3,835,689

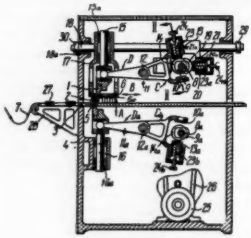
DEVICE FOR CORRUGATION OF STRIPS

Grigory Semenovich Antonenko, ulitsa Yanvarskogo vosstania, Odessa; Avetik Artashesovich Badamian, ulitsa Goncharova, 17, kv. 51, Moscow; Grigory Borisovich Margulis, ploschad Potemkintsev, 3, kv. 2, Odessa; Ilya Alexandrovich Moroz, ulitsa Varnenskaya, 9, kv. 26, Odessa, and Mikhail Borisovich Shitsman, ulitsa Chicherina, 31, kv. 13, Odessa, all of U.S.S.R.

Filed May 10, 1972, Ser. No. 252,034

Int. Cl. B21d *13/02*

U.S. Cl. 72—385 **2 Claims**



Device for corrugating strips, comprising punches linked by a driving camshaft, wherein each punch has means for withdrawing it from a cooperating forming surface at the moment of feed of the strip being corrugated. This means includes an auxiliary cam secured on the driving camshaft and a pusher interacting with said auxiliary cam, and secured on one arm of a lever whose other arm is connected to the punch, said lever being adapted for transmitting reciprocating motions to said punch from said camshaft.

3,835,690

DEVICE FOR CONNECTING METALLIC SLEEVES TO FINNED REINFORCING BARS

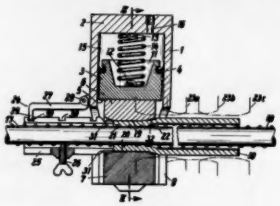
Fritz Leonhardt, Stuttgart; Volker Hahn, Leinfelden, and Werner Fastenau, Esslingen-Rudern, all of Germany, assignors to Ed. Zublin Aktiengesellschaft, Stuttgart, Germany

Division of Ser. No. 872,950, Oct. 31, 1969, abandoned. This application Oct. 26, 1971, Ser. No. 192,435

Claims priority, application Germany, Nov. 2, 1968, 1806665

Int. Cl. B21j *9/12*

U.S. Cl. 72—415 **8 Claims**



Apparatus is disclosed for connecting sleeves to fin-equipped reinforcing bars for concrete, which bars consist of a material which is harder than the material of said sleeve. The sleeve is deformed by pressure in such a way that the fins of said reinforcing bar means press themselves into the sleeve and positively interlock therewith while the deformation of the sleeve is effected in sections over the length of the sleeve.

3,835,691

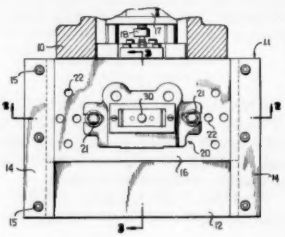
SLIDING EJECTOR PAD ATTACHMENT FOR USE WITH SLIDING BOLSTER PLATE FOR PRESSES

Thomas F. Specht, Arlington Heights, and Robert J. Babecki, Chicago, both of Ill., assignors to Union Special Corporation, Chicago, Ill.

Filed June 27, 1973, Ser. No. 374,037

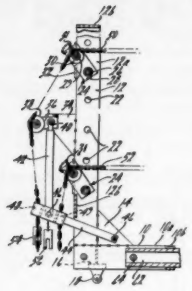
Int. Cl. B21d *45/00*

U.S. Cl. 72—427 **18 Claims**



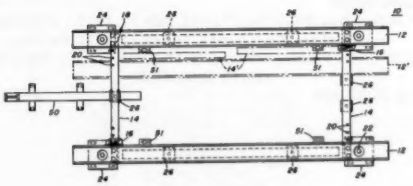
This disclosure relates to an ejector pad attachment for use with a sliding bolster plate of a press and permits a movable die member carried by a sliding bolster plate to have constantly associated therewith a supporting ejector pad while at the same time permitting the movable die member and ejector pad to move as is required during the operation of the press. The ejector pad is carried by the bolster plate for movement therewith and there is provided at the work station a platen assembly which is cooperable with the ejector pad to resiliently resist the displacement of the ejector pad and an associated die member during a work forming operation and thereafter return the movable die member and ejector pad to their original positions prior to the retraction of the bolster plate.

3,835,692
VEHICLE FRAME STRAIGHTENING TOOL
Robert B. Hoffman, P.O. Box 505, Burlingame, Calif. 94010
Continuation of Ser. No. 244,821, April 17, 1972. This application Mar. 4, 1974, Ser. No. 447,470
Int. Cl. B21d *1/12*
U.S. Cl. 72—442 6 Claims



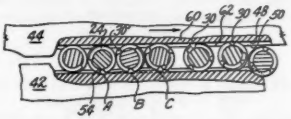
A portable frame straightening machine in which a vertical post is fixed to one end of a horizontal beam that is adapted to be positioned under an automobile body to be straightened. A lever pivoted on the machine adjacent the bottom of the post is operated by a hydraulic ram and is capable of pulling two separate chains which pass over pulleys adjustably positioned on the vertical post.

3,835,693
COLLAPSIBLE STRAIGHTENER FOR AUTOMOBILE FRAMES
Andrew S. Majersky, R.D. No. 4, Apollo, Pa. 15613
Filed Oct. 24, 1972, Ser. No. 299,809
Int. Cl. B21d *1/12*
U.S. Cl. 72—457 6 Claims



Improvements in an apparatus for straightening automobile frames in that the new apparatus is mobile and collapsible. The apparatus is mounted on casters and also disassembles for ease in moving and storing. It also allows for pulling the automobile frame in any direction by locating slidable and rotatable brackets on both longitudinal and transverse beams, thus allowing the pulling device to be quickly and easily mounted to enable the application of straightening force in any position around the perimeter of the automobile.

3,835,694
DIES FOR MAKING A SELF TAPPING FASTENER
Edwin J. Skierski, 35 Pilgrim Ln., Stratford, Conn. 06075
Division of Ser. No. 256,370, May 24, 1972. This application Sept. 18, 1973, Ser. No. 398,318
Int. Cl. B21h *3/06*
U.S. Cl. 72—469 5 Claims



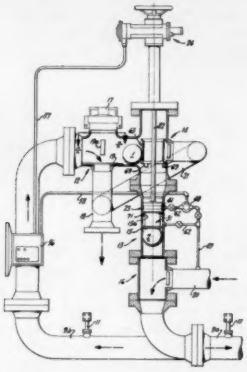
A self tapping threaded fastener, the method of making same and the rolling dies therefor wherein said fastener is adapted for assembly with a member in which a standard internal thread is formed by the fastener and in which a zero running torque or controlled prevailing torque is established between said fastener and member. A plurality of thread forming lobes are disposed on an otherwise standard, substantially fully formed thread on the tapered work entering end, wherein predetermined lobes on said tapered end proximate the shank portion are rolled such that their ultimate projection is within the envelope of the imaginary projection of the convolution of the shank thread toward the tip of said fastener. The method of making said fastener includes rolling a substantially continuous thread from said shank portion throughout said tapered work entering portion and simultaneously forming spaced apart thread forming lobes superimposed upon said thread in said work entering portion, then subsequently rerolling said threaded shank portion and said predetermined lobes on the work entering portion to the cylindrical thread convolution of said shank portion, as projected.

The dies for rolling said fastener include a first, and second rolling dies, said dies having a fastener entrance end and a fastener exit end, and disposed intermediate said ends thread forming surfaces including a plurality of parallel thread crest forming grooves and thread root forming ridges having a shank forming flat portion being bounded along one edge by an upwardly inclined tip forming surface, said first rolling die being the primary rolling die and having a shank and tip forming section including a lobe forming section wherein a plurality of regularly spaced lobe forming pockets are disposed in said thread forming grooves and ridges in said tip forming surface, a reroll support section wherein said thread forming surfaces match said shank forming flat portion and a release section, said reroll support section of a predetermined rolling length so as to reroll a predetermined number of said thread forming lobes, and a said second rolling die having shank and tip forming sections, and a reroll section so disposed as to reroll a predetermined number of said thread forming lobes.

3,835,695
METER PROVING APPARATUS AND METHOD
Marvin H. Grove, Houston, Tex., assignor to M & J Valve Company, Houston, Tex.
Continuation of Ser. No. 219,432, Jan. 20, 1972, abandoned. This application Apr. 7, 1972, Ser. No. 242,125
Int. Cl. G01f *25/00*
U.S. Cl. 73—3 5 Claims

A meter prover apparatus and method of the type making use of a metering pipe and an interchange connecting the ends of the pipe which uses a piston-like plunger having sealing means which fit into a launching sleeve interposed in the interchange, the spheres being successively moved through the sleeve and launched into the metering pipe by reciprocation of the plunger. The complete cycle is carried out in such a manner as to avoid jamming of spheres in the interchange. At the beginning and during a prover run leakage past the

plunger is detected by reference to the pressure differential between the line and the space between the plunger sealing



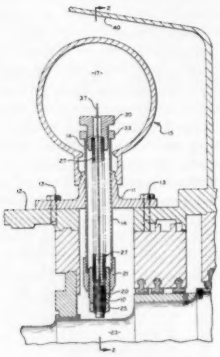
means. Also the seal integrity of each sphere can be checked to insure absence of fluid bypass about the sphere during a run.

3,835,696

MOUNTING STRUCTURE FOR VIBRATION DETECTING PROBE

Ronald F. Amberger, Jeannette, and David M. Mizikar, Mt. Pleasant, both of Pa., assignors to Carrier Corporation, Syracuse, N.Y.

Filed July 31, 1972, Ser. No. 276,498
Int. Cl. G01h *11/00*
U.S. Cl. 73—70 **5 Claims**



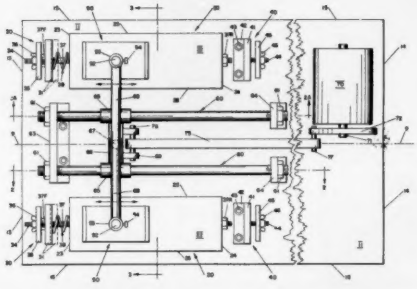
A vibration detecting probe is mounted in a holder having threaded engagement with the inner end of the bore in a support fixed in the casing of the machine. The function of the probe is to detect vibration in or caused by an element of the machine rotating at high speed. A probe adjusting member is accessible externally of the outer end of the support and is fixedly connected to the probe for effecting rotation thereof for axial movement toward and from the rotating element of the machine. The probe adjuster consists of a member extending axially in the support and which is resiliently deflectable in a direction transverse to the axis thereof from a straight form to a curve form. Means is provided for applying tension in the adjuster to prevent any movement or vibration of the adjusted probe holder. Upon the probe holder being unthreaded from the support, the resilient deflectable member permits withdrawal of the probe holder from the support regardless of low clearance over the support.

3,835,697

APPARATUS FOR TESTING FABRICS AND OTHER SHEET MATERIALS

Charles Schneider, and George A. Goodman, both of Omaha, Nebr., assignors to Charles, Inc., Council Bluffs, Iowa

Filed June 4, 1973, Ser. No. 366,708
Int. Cl. G01n *3/56*
U.S. Cl. 73—7 **9 Claims**



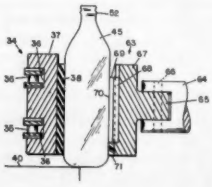
Apparatus for testing fabrics and the like for wearability and generally comprises a generally horizontally extending base member including a broad upper surface, an anvil member having a longitudinally extending lofty upper-side, clamp means at the two anvil ends for removably attaching the test fabric in stretched condition above the anvil upper-side, a shoe member overlying the anvil and adapted to firmly downwardly abut the test fabric, powering means ultimately attached to the shoe member for causing repeated longitudinally reciprocatable movement thereof over a lengthy time period while abutting the test fabric, and other desirable features for implementing the apparatus purposes. For preferred apparatus embodiments, a pair of transversely separated anvil members are employed whereby the same kind of woven fabric can be tested simultaneously for wearability both in the warp and weft directions of the test fabrics.

3,835,698

TESTER HEAD

Anthony T. Zappia, 7576 Ivywood Dr., Apt. A, Indianapolis, Ind. 46250

Continuation of Ser. No. 272,692, July 17, 1972, , which is a division of Ser. No. 126,563, March 22, 1971, Pat. No. 3,777,556. This application Oct. 15, 1973, Ser. No. 406,278
Int. Cl. G01n *3/08*
U.S. Cl. 73—94 **3 Claims**



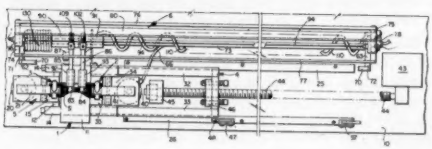
Apparatus for impressing a transaxial crushing force of predetermined value successively upon a series of substantially identical pieces of frangible ware for the purpose of

discarding pieces of defective strength, including a pneumatically-loaded presser head in opposed registration with a vertically disposed face of a conveyor or impeller, the same being so disposed that pieces of ware, while being subjected to transaxial pressure, are supported in unstable condition upon a moving platform so that, upon fracture of a piece of ware, substantially all fragments of such piece will fall from the platform, means being provided for cooperation with the upper regions of undamaged ware to support such ware against toppling from the platform. The active face of the presser head is formed of synthetic material, that portion thereof below a level at least equal to the transaxial dimension of a piece of ware above the platform having a coefficient of friction significantly less than that of the portion of the face above that level to facilitate the free movement of a prostrate ware piece past the presser head.

3,835,699
LONG STROKE TESTING MACHINE

Robert S. Strimel, Penllyn, Pa., assignor to Tinius Olsen Testing Machine Co., Inc., Willow Grove, Pa.

Filed Sept. 27, 1973, Ser. No. 401,203
Int. Cl. G01n *3/08*
U.S. Cl. 73—95 **8 Claims**

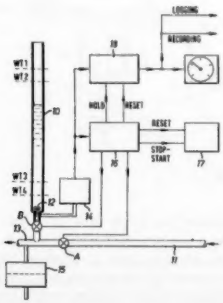


Machine for tension-testing specimens of the type which elongate or strain several times their original length.

3,835,700
FUEL METER

Peter Dennis Gamble, Mickleover, England, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed June 28, 1973, Ser. No. 374,374
Claims priority, application Great Britain, July 12, 1972, 32627/72
Int. Cl. G01f *1/04*
U.S. Cl. 73—113 **9 Claims**

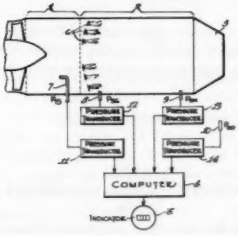


A meter for fuel or other liquid using an upstanding precision bore for containing the liquid and a pressure transducer disposed in the lower part of the tube to generate electrical signals dependent on the liquid level of the same. A control system and trip means registers the time elapsing as liquid is withdrawn from the tube between two selected liquid levels, to cause the tube to be refilled at a further level and to disable the meter and actuate an alarm at a fourth level signal. An electronic differentiator provides rate of change signals from the pressure dependent signals for logging, indication and the like, and the output of the differentiator can be held at a selected level signal for the refilling of the tube.

3,835,701
METHOD AND APPARATUS FOR DETERMINING THE THRUST OF A JET ENGINE

John R. B. Murphy, Kanata, Ontario, Canada, and Edelbert G. Plett, Belle Mead, N.J., assignors to Canada Data Canada, Ltd., Ontario, Canada

Filed Jan. 31, 1972, Ser. No. 222,225
Claims priority, application Canada, Oct. 29, 1971, 126454
Int. Cl. G01m *15/00*
U.S. Cl. 73—117.4 **4 Claims**



Apparatus is known for determining gross thrust in jet engines by measuring various internal pressures, including measurement of total pressure at the nozzle entrance by means of an immersed probe. The immersed probe has a very short life when an afterburner is used in the engine. The apparatus for the invention is able to determine total pressure at the nozzle entrance, without an immersed probe, from the total pressure in the diffuser and the static pressure at the nozzle entrance. Another embodiment makes use of an additional static pressure in the flameholder region. Also, the invention is for determining the gross thrust of an engine and it distinguishes between an engine with a nozzle operating in a choked condition and an unchoked condition.

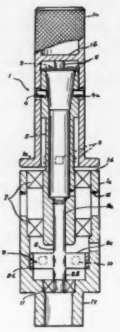
3,835,702
MULTI-AXIS BIO-MECHANICAL FORCE MEASURING DEVICE

Robert E. Van Patten, Kettering, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sept. 13, 1973, Ser. No. 396,967
Int. Cl. G01l *5/22*
U.S. Cl. 73—133 R **9 Claims**

A hand grip device positionable on an aircraft control stick and having built-in force-measuring means for separating and measuring various force vectors being developed while maneuvering the aircraft into various positions and including an upper housing rigidly mounting therewithin a tension/compression-force measuring diaphragm unit and the upper end portion of a bending moment-measuring column member af-

fixed to the diaphragm unit, and a lower housing mounting the lower end portion of the column member in constraining bear-



ing elements and a torsion gage assembly having a spindle with an upper end fixed within the column member-lower end and a lower end thrust bearing mounted in the lower housing.

3,835,703

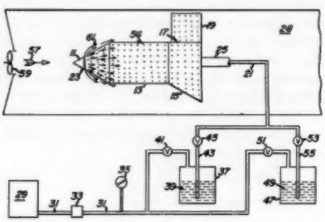
FLOW VISUALIZATION USING COLOR REVERSIBLE DYES

Clarence C. Bush, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 21, 1973, Ser. No. 362,568

Int. Cl. G01m 9/00

U.S. Cl. 73—147 **6 Claims**



A system for surface flow visualization using color reversible dyes comprising an aerodynamic test model positioned in an air tunnel. The model has means for conducting an activating and erasing fluids to the nose of system. The surface of the model has been covered with a paint which has been impregnated with the color reversible dye.

In operation, the tunnel's airstream entrains droplets of an activating fluid which is conducted from a source to the surface of the model. The droplets of entrained fluid impinges on the model thereby affecting a color change which indicates local direction of surface flow. The flow pattern is dried and photographed. Said flow pattern may be subsequently removed by an erasing fluid and a new one formed.

3,835,704

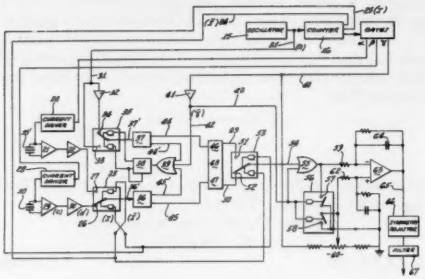
FLUID FLOW METERS

Shmuel Elazar, and Dee J. Neville, both of Oxnard, Calif., assignors to Statham Instruments, Inc., Oxnard, Calif.

Filed July 22, 1971, Ser. No. 165,069

Int. Cl. G01f 1/00

U.S. Cl. 73—194 A **6 Claims**



A fluid flow meter employing a single pair of sonic signal transducers and methods for alternately energizing each of said transducers to convert them alternately into sonic generators and receptors and receiving and algebraically summing the output of said transducers acting as receptors as a function of fluid velocity.

3,835,705

FLOWMETER

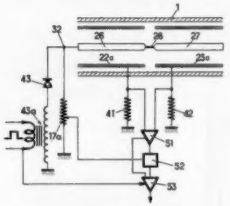
Huguette Micheline Mary Nadot Hadjidjanian, Pavil Lon-Sous-Bois, France, assignor to Societe Civile Le Brin, S/Marne, France

Filed May 12, 1972, Ser. No. 252,565

Claims priority, application France, May 19, 1971, 71.18280

Int. Cl. G01f 1/00

U.S. Cl. 73—194 F **11 Claims**

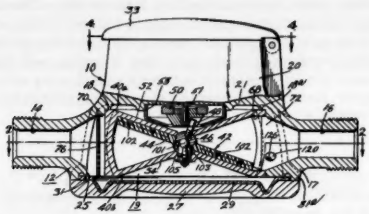


Gauge for measuring the mass flow of a gas comprising means for producing a corona discharge of ions in response to high voltage pulses, at least two collecting electrodes for receiving said ions, means for measuring the difference in the number of ions reaching two of said electrodes, and electronic means for interrupting said measurement at variable intervals so that the length of time during which the measurement is carried out is less than the length of time between two successive high voltage pulses.

3,835,706
FLUID METER

Andrew Varga, 1603 E. Cardeza St., Philadelphia, Pa. 19150

Continuation of Ser. No. 115,201, Feb. 16, 1971, abandoned, which is a division of Ser. No. 663,265, Aug. 25, 1967, Pat. No. 3,564,919. This application Jan. 26, 1973, Ser. No. 327,201
Int. Cl. G01f 1/02, 3/12
U.S. Cl. 73—254 11 Claims

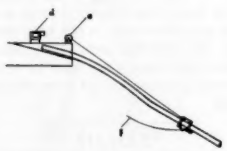


In a positive displacement fluid meter provided with bypass port means, accuracy of compensation for internal leakage paths, A_lC_l, is improved by placing the leakage compensator means totally within the meter and in the internal fluid flow path so that differential fluid pressure, ΔP, causing fluid flow through the measuring chamber also causes flow through the leakage compensator, A_pC_p, as required by the expression for total flow $Q_t = \sqrt{2G\Delta P}\ (A_mC_m + A_lC_l + A_pC_p)$. As need requires, the leakage compensator may be an integral part of the measuring chamber assembly or the interior of the meter casing. In the former the measuring chamber assembly may be compensated during manufacture prior to assembly and allows interchangeability of measuring chamber assemblies. In the latter arrangement measuring chamber assemblies without integral compensators are used. In both arrangements adjustments may be made while installed in the meter casing by removing the bottom cover and liner seal. This total meter configuration provides for design simplicity, minimal parts, ease of manufacturing, maintenance.

3,835,707
DEVICE FOR SURVEYING THE CONFIGURATION OF AN IMMERSED PIPE DURING ITS LAYING

Giovanni Rosa, and Angelo Canepa, both of San Donato Milanese, Italy, assignors to SAIPEM, S.p.A., San Donato Milanese, Italy

Filed Nov. 10, 1972, Ser. No. 305,470
Claims priority, application Italy, Nov. 17, 1971, 31193/71
Int. Cl. G01c 19/76
U.S. Cl. 73—291 2 Claims

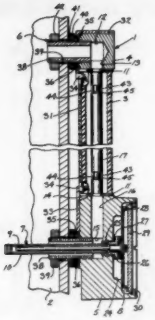


An apparatus for surveying the configuration of a submarine pipeline during its laying including a carriage carrying depth sensing and distance sensing means and adapted to be rolled along the pipe between the pipe laying ship and the bottom of the body of water. Depth and distance are simultaneously recorded.

3,835,708
COMBINED LIQUID LEVEL AND TEMPERATURE GAUGE

Donald G. Gruett, Manitowoc, Wis., assignor to Oil-Rite Corporation, Manitowoc, Wis.

Filed July 21, 1972, Ser. No. 273,988
Int. Cl. G01f 23/02
U.S. Cl. 73—292 2 Claims

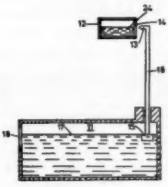


The combined liquid level and temperature gauge of this invention includes an assembly of opposed hollow end members having a tubular sight member interposed therebetween and communicating therewith. The assembly is secured together by means disposed interiorly of the sight member and connecting the opposed end members. The lower of the end members is adapted to house a thermometer unit having a sensing stem disposed in a well which projects rearwardly from the end member into the tank. Fastener means connect at least the lower of the end members to the tank for mounting the gauge assembly onto the tank and placing the liquid contents of the tank in communication with the sight member.

3,835,709
LIQUID LEVEL INDICATORS

Kenneth Watson, Yeovil, England, assignor to Westland Aircraft Limited, Yeovil, Somerset, England

Filed Sept. 5, 1972, Ser. No. 286,322
Int. Cl. G01f 23/02, 23/10
U.S. Cl. 73—311 11 Claims

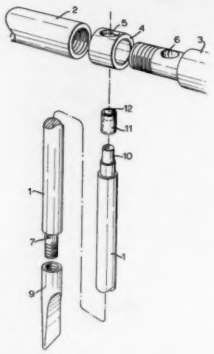


The invention discloses a liquid level indicating means which provides a continuous indication of the level of liquid monitored in a container relative a datum level during attitude changes of the container. A second smaller container has a liquid therein corresponding to the volumetric ratio of the ratio of liquid in the first container. Indicator means for the two containers provide a means to compare the monitored levels. The container may be of non-uniform internal shape.

3,835,710
GEO-CHEMICAL EXPLORATION METHOD

Louis August Pogorski, 660 Eglinton Ave. West, Toronto, Ontario, Canada

Filed May 3, 1971, Ser. No. 139,347
Int. Cl. G01n 1/22
U.S. Cl. 73—421.5 R 5 Claims

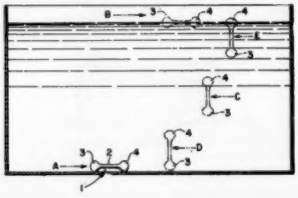


This is a method for prospecting for hydrocarbon, bitumen and radioactive mineral deposits by collecting relatively small subsurface soil gas samples and analysing same to determine areas of anomalously high helium content therein. The samples are collected by using a long slender shaft capable of being driven into the ground which has a capillary bore running substantially its entire length. The inlet to the lower end of the capillary bore is controlled by a cap which may be opened or closed by turning the shaft when the device is in the ground and the upper end of the bore is sealed by a septum comprising a flexible sleeve fitting over the end of the shaft and a flexible plug closing the sleeve. The sample is collected in a container having a sharpened hollow tube as an inlet port. The sharpened tube may be inserted through the flexible plug to communicate with the capillary bore of the shaft for withdrawing a gas sample from the subsurface soil. The container is the type which may be deformed into a collapsed configuration and will return to its expanded configuration to draw in a gas sample.

3,835,711
DEVICE FOR MEASURING SPECIFIC GRAVITY OF LIQUIDS

William E. Kelley, Euclid, Ohio, assignor to Aquarium Systems, Inc., Eastlake, Ohio

Filed June 25, 1973, Ser. No. 372,947
Int. Cl. G01n 9/12
U.S. Cl. 73—444 10 Claims

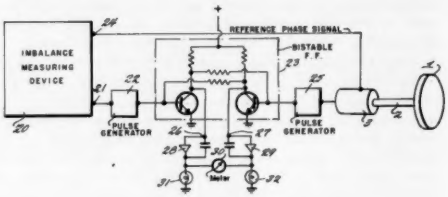


Device consists of an elongated body portion weighted on opposite ends thereof. The density of the body portion is preferably less than the desired density or density range of the liquid medium whose density is to be measured, whereas the density of the weighted ends of the device is greater so that the average density of the entire device falls within the desired density range of the liquid medium. Alternatively, the body portion may be more dense than the liquid medium to be measured and the ends unweighted by plugs of lower density than the liquid medium to be measured. The ends of the device are also slightly unbalanced whereby when the device is placed in a liquid medium of the desired density range, the device will become suspended within the liquid medium below the surface of a vertical position with the heavier end down and the lighter end up. If the density of the liquid medium increases or decreases, the device will so indicate by correspondingly rising or falling within the liquid medium. If the density of the liquid medium becomes quite low, the device will sink to the bottom with both ends resting on the bottom, whereas if the density of the liquid medium becomes quite high, the device will float to the top of the liquid medium with both ends floating on top of the water, thereby indicating at a glance the approximate density range of the liquid medium.

3,835,712
WHEEL BALANCING APPARATUS

Richard Muller, Worfelden, Germany, assignor to Gebr. Hofman KG, Darmstadt, Germany

Filed Feb. 28, 1973, Ser. No. 336,895
Claims priority, application Germany, Mar. 20, 1972, 2213449
Int. Cl. G01m 1/22
U.S. Cl. 73—462 3 Claims



An apparatus for balancing a rotary body with a balancing spindle for carrying the rotary body to be balanced, means for measuring and storing the angular position of unbalance of the rotary body, a phase displacement device non-rotatably connected to the balancing spindle and in operation receiving a reference phase signal from the measuring means and delivering an output voltage whose phase position represents a measurement of the angular position of unbalance, and an indicator comprising a scale for indicating only a part of the whole angular range of 360°, which part is adjacent to the value zero on the scale, a pointer which can be set to the value zero on the scale by rotation of the phase displacement means and the rotary body, for rotating the rotary body into the correct position for a balancing operation, and two illuminatable direction-indicator means, the brightness of illumination of each of the direction-indicator means being independently controllable by the output voltage of the phase displacement means and by the stored measurement value in said measuring means, whereby any difference in the brightness of illumination of each of the direction-indicator means indicates the direction in which the rotary body must be rotated to move it towards the correct position and to bring the pointer into the range of the scale.

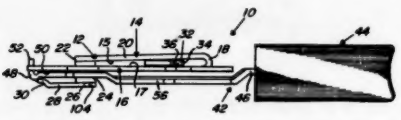
3,835,713
KEY SLIDE MECHANISM FOR A PUSHBUTTON RADIO RECEIVER

Emery E. Olah, Schaumburg, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed July 12, 1973, Ser. No. 378,762
Int. Cl. F16h 35/18
U.S. Cl. 74—10.33 12 Claims

A key slide mechanism for a pushbutton radio receiver, includes a locking lever assembly having first and second legs

extending parallel to each other and joined together at a first end with first surfaces thereof being in opposing relation. The opposite end of the second one of the legs is bent into a U-shape and extends transverse the legs and partially encircles the first leg. The extreme free end of the second leg extends parallel to the first leg adjacent the surface thereof opposite the first-mentioned surface. A memory cam is mounted for rotation between the first surfaces of the legs. A pushbutton actuator rod has one end extending between the free end of the second leg and the opposite surface of the first leg. The opposite end of the pushbutton rod is separated from the legs of the locking lever assembly and is mounted in the radio tuner housing separately and independently therefrom to minimize



interaction therebetween upon depression of the pushbutton actuator rod. Movement of the actuator rod to force the one end thereof into engagement with the extreme free end of the second leg, forces the first and second legs together to capture the memory cam in a preselected position corresponding to a predetermined frequency setting of the radio receiver and to join the actuator rod and locking lever assembly at the corresponding ends thereof so that the actuator rod and locking lever assembly move as a unit thereafter to recall the frequency setting each time the pushbutton actuator rod is depressed. Movement of the actuator rod in the opposite direction, separates the one end thereof and the extreme free end of the second leg to permit rotation of the memory cam for resetting.

3,835,714

DEVICE COMPRISING A LIQUID-SUPPORTED ROLLING DIAPHRAGM SEAL

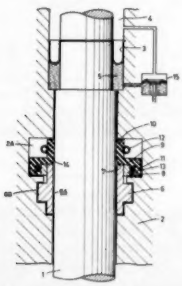
Herman Henricus Maria van der Aa; Robby Van Giessel, and Gregorius Theodorus Maria Neelen, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 13, 1972, Ser. No. 243,661

Claims priority, application Netherlands, Apr. 21, 1971, 715348

Int. Cl. F16j *15/52*

U.S. Cl. 74—18.2 **4 Claims**



A device comprising a liquid-supported rolling diaphragm seal between two relatively reciprocating elements, further including a flexible metal sleeve between the two elements, and a clamping ring urging the sleeve radially against one of said elements.

3,835,715

HAMMER DRILL MECHANISM

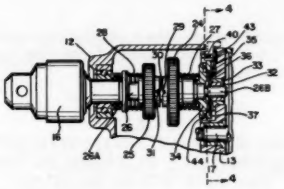
Harold George Howell, Bedfont, England, assignor to The Black and Decker Manufacturing Company, Towson, Md.

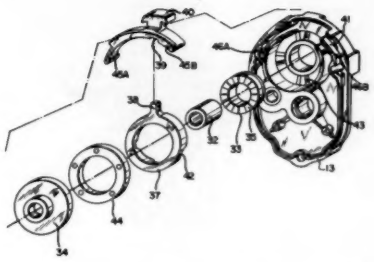
Filed June 28, 1973, Ser. No. 374,565

Claims priority, application Great Britain, July 13, 1972, 32743/72

Int. Cl. F16h *21/06*

U.S. Cl. 74—22 R **9 Claims**





A portable electric tool is adapted for drilling or hammer-drilling operations. The hammer-drilling mechanism is simple, reliable, easy to adjust, and facilitates low-cost high-volume manufacture of the tool. Additionally, a two-speed gearing is provided, such that the tool has four modes of operation: low-speed drilling; low-speed hammer-drilling; high-speed drilling; or high-speed hammer-drilling.

3,835,716

CRANK-DRIVEN RECIPROCATING MECHANISMS

Leslie Mark Ballamy, Hallams Court, Blackheath, England

Filed Oct. 20, 1971, Ser. No. 190,889

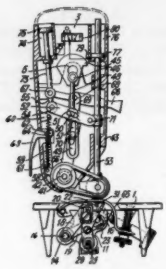
Claims priority, application Great Britain, Oct. 23, 1970, 50460/70

Int. Cl. F16h *21/32*

U.S. Cl. 74—40 **16 Claims**

A crank driven reciprocating mechanism comprising a driven crank device, a connecting rod articulated to the eccentric crank of the crank device and carrying a shackle pin, and a shackle disposed transversely of the rod articulated to a fixable member on one side of the rod and on the other side of

the rod to a reciprocable member and having between its ends a longitudinal slot engaged by the shackle pin. This



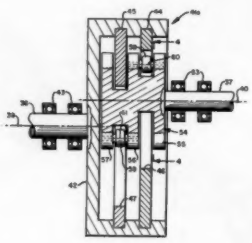
mechanism can be used as the needle bar drive and if desired to drive the fabric feed mechanism of a stitching machine such as a tufting machine or a sewing machine.

3,835,717

GEARLESS INTERMITTENT MOTION DEVICE

Rome R. Rudolph, 4113 Lee Rd., Gibsonia, Pa. 15044

Filed Apr. 5, 1973, Ser. No. 347,991
Int. Cl. F16h *21/48*
U.S. Cl. 74—70 **8 Claims**



A gearless device for producing intermittent output from a single continuous input. The device incorporates a conjugate pair of endless internal cam surfaces secured to the input shaft which rotates at a constant angular velocity. Cam followers, supported by the output shaft, engage the cam surfaces and are angularly displaced thereby to produce, at the output shaft, a motion period followed by a dwell period. The conjugate pair of cam surfaces and the cam followers may be arranged to provide output oscillation or output indexing.

3,835,718

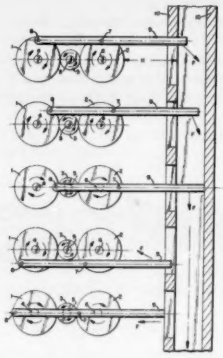
IMPELLER MECHANISM

Thomas B. Wilson, Jr., 10481 Randall St., Orange, Calif. 92669

Filed July 24, 1972, Ser. No. 261,264
Int. Cl. F16h *33/10*
U.S. Cl. 74—86 **8 Claims**

Impeller mechanism with an output which imparts a cyclic motion to a blade of variable configuration which results in the production of a predominant component of force or pressure when the blade is in contact with various substances into which it can penetrate or to which it can attach itself. The impeller mechanism consists of a minimum of two cranks constrained to rotate in a prescribed angular relationship to each other and with a blade of variable configuration attached to and free to rotate about the crank handles. Supporting structure, bearings, sealing mechanisms, covers and other ancillaries complete the impeller mechanism and adapt it to specific functional applications.

In a separate configuration, with the blade constrained to move along one axis only, the impeller mechanism is operated



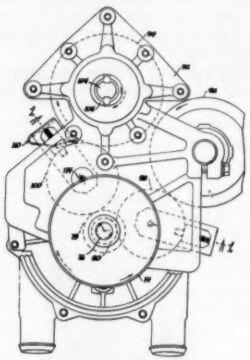
backwards by deriving energy from an expanding fluid to function as a prime mover or engine. Because of the unique configuration low pressure operation of the unit is possible with potentially great benefits to the environment by utilization of closed thermodynamic cycles or reduction of pollutants in conventional thermodynamic cycles.

3,835,719

ROLL RETRACTOR FOR ROLLER DRIVE MECHANISM

James A. Bernard, Dayton, and Byron L. Brucken, Miamisburg, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 18, 1973, Ser. No. 352,194
Int. Cl. F16h *13/00*
U.S. Cl. 74—208 **7 Claims**



A roller drive agitating and spinning mechanism has an improved device for retracting a roller from the drive train when the roller is not transmitting power. The retractor device has a pad of ultra-high molecular weight polyethylene which is spring-biased against the roller surface of polyurethane at an angle to cause the roller to retract. The pad also serves to wipe wear debris and other foreign matter from the roller surface during operation of the mechanism to maintain the roller surface smooth and clean.

3,835,720

ENDLESS POWER TRANSMISSION BELT AND METHOD OF MAKING SAME

David G. Fisher, and Jerry W. Hill, both of Springfield, Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Aug. 10, 1973, Ser. No. 387,420
Int. Cl. F16g *1/28*
U.S. Cl. 74—231 C **20 Claims**

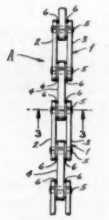
An endless power transmission belt and method of making same is provided wherein such belt is adapted to be operated in an endless path and comprises a tension section, a load-carrying section, and a compression section having a plurality of teeth arranged transverse the endless path with each of the teeth having a plurality of parallel randomly dispersed strength members each extending completely across its associated tooth with the randomly dispersed members increasing the transverse rigidity of the belt as well as providing nonsymmetrical patterns for the strength members which tend to prevent the development of shear planes and thereby prevent premature belt failure.

3,835,721

CHAIN CONSTRUCTION

George O. Hoffstetter, 999 W. Lake Dr., Jerseyville, Ill. 62052

Filed Nov. 21, 1972, Ser. No. 308,486
Int. Cl. F16g *13/02*
U.S. Cl. 74—245 R **7 Claims**



In a chain, comprising a series of links pivotally held together by means of a pin to provide for flexibility of use, a spacer is provided intermediate each linking member held together by said pin for the purpose of preventing their contiguous contact.

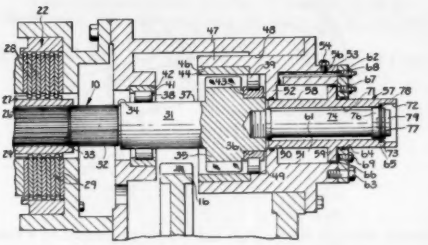
3,835,722

QUICK DISCONNECT DEVICE FOR POWER TRAINS

August H. Bertram, and Calvin L. Miller, both of Aurora, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 28, 1973, Ser. No. 345,791
Int. Cl. F16h *57/00*
U.S. Cl. 74—405 **14 Claims**

A power train comprises a pair of spur gears normally maintained in meshed relationship to transmit power therebetween. A piston is secured to a shaft, having one of the gears secured thereon, to selectively move the shaft axially to disengage the gears upon pressurization of an actuating chamber associated with the piston.

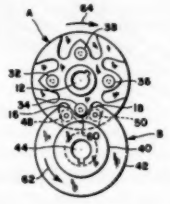


3,835,723

INTERMITTENT MOTION DEVICE

Zugel Martin J., Cleveland, Ohio, assignor to Cyclo Index Corporation, Cleveland, Ohio

Filed Sept. 4, 1973, Ser. No. 393,716
Int. Cl. F16h *55/04, 27/04;* **B23q** *17/02*
U.S. Cl. 74—436 **5 Claims**



An indexing mechanism includes a rotable driven device having slots and a rotatable driving device having pins engageable with the slots for accelerating and decelerating the driven device. The driven device has rollers engageable with the outer periphery of the driving device for locking the driven device against rotation when it is not being indexed by the pins.

3,835,724

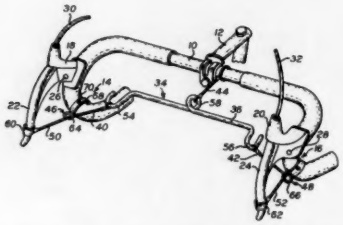
AUXILIARY BICYCLE BRAKE DEVICE

William B. Hoffman, 67 Ships Point Ln., Oyster Bay, N.Y. 11771

Continuation-in-part of Ser. No. 316,234, Dec. 18, 1972, Pat. No. 3,760,648. This application Aug. 29, 1973, Ser. No. 392,568
Int. Cl. B62l *3/02;* **G05g** *13/00*
U.S. Cl. 74—489 **12 Claims**

A braking device for use on a bicycle handle of the type used on racing bicycles which consists of an auxiliary brake located in a position to be grasped by a bicycle rider while having his hands on the cross bar of the bicycle handle bar rather than on the end handles. The auxiliary brake is

mounted in position by flexible mounting means which flexibly connect the auxiliary brake to the pivotal brake handle



levers, whereby the auxiliary brake may be grasped by a rider to apply the brakes while the rider has his hands on the cross bar or other locations of the bicycle handle.

3,835,725

STEERING ASSEMBLY OF A MOTOR VEHICLE

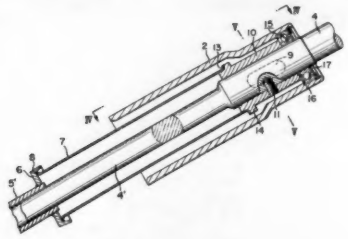
Hirosuke Furusho, Hyogo, and Shigetaka Fukui, Osaka, both of Japan, assignors to Daihatsu Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 4, 1973, Ser. No. 347,627

Claims priority, application Japan, Apr. 11, 1972, 47-36200

Int. Cl. B62d *1/18*

U.S. Cl. 74—492 **1 Claim**



A sleeve is fixed to an upper shaft portion of a steering shaft consisting of upper and lower shaft portions, and this sleeve is used for two purposes, that is to say, for receiving a key operated member of a handle lock device on a supporting member fixed to the body of the motor vehicle, and for supporting an upper end of a collapsible energy absorbing member which is supported at its lower end by the lower shaft portion of the steering shaft.

3,835,726

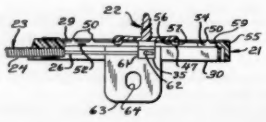
LAWN MOWER CONTROL

Ted Gregory, Mundelein, Ill., assignor to Arens Controls, Inc., Evanston, Ill.

Filed Jan. 12, 1973, Ser. No. 323,286

Int. Cl. F16c *1/10*

U.S. Cl. 74—501 P **3 Claims**



A Bowden cable control for lawn mower engines and the like is provided. The control includes a control plate and a control knob; a retaining flange is integrally formed with the knob to engage the underside of the plate. Embossments formed at the ends of the knob stress the knob to provide a resilient slide control action throughout a wide range of environmental conditions.

3,835,727

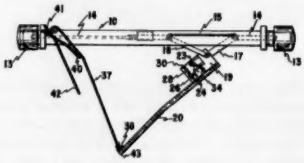
STEPPED TOGGLE MECHANISM

Henry L. Sundermann, Rt. 4 Box 79, Sioux Falls, S. Dak. 57101

Division of Ser. No. 211,907, Dec. 27, 1971, Pat. No. 3,780,833. This application June 26, 1973, Ser. No. 373,886

Int. Cl. G05g *1/04*

U.S. Cl. 74—520 **4 Claims**



A stepped toggle mechanism having two principal links for expanding movement and a stepped release mechanism adapted to allow subsequent similar movements of an operating arm to first expand the toggle to a set position and then to release it.

3,835,728

BALANCING DEVICE FOR A SIX CRANKPIN CRANKSHAFT

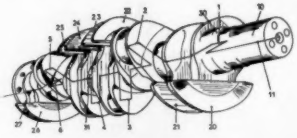
Michel Bernard, Lyon, France, assignor to Automobiles M. Berliet, Lyon (Rhone), France

Filed July 6, 1973, Ser. No. 377,009

Claims priority, application France, July 7, 1972, 72.25654

Int. Cl. F16c *3/00*

U.S. Cl. 74—603 **3 Claims**



The arrangement of the weights for balancing a crankshaft having six crankpins is such that the middle balance weights are offset by an angle of 60 degrees with respect to the end crankpins and are diametrically opposed to the middle crankpins. The middle balance weights are diametrically opposed to the end balance weights and are identical thereto. All of the balance weights have the same symmetric longitudinal axis.

3,835,729

MEANS FOR PREVENTING DRIVING CHAIN FROM COMING OFF MULTI-SPEED TRANSMISSION FRONT GEAR FOR BICYCLE

Satoshi Tarutani, c/o Shimano Industrial Co., Ltd., 77, 3-cho, Oimatsu, Sakai-shi, Osaka Prefecture, Japan

Filed Nov. 24, 1972, Ser. No. 308,943

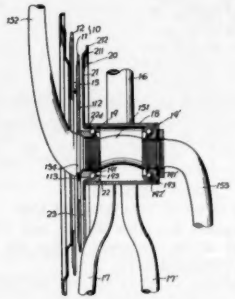
Claims priority, application Japan, Nov. 27, 1971, 46-111684

Int. Cl. F16p *1/00*

U.S. Cl. 74—611 **8 Claims**

In a multi-speed transmission front gear system mounted on a bicycle crank shaft for rotation therewith, the gear system at

least two different dent-numbered sprocket wheels, a discoidal chain guard member having a larger diameter than that of the minimum dent-numbered lower speed sprocket wheel, a fitting flange adapted to support the lower speed sprocket wheel on the foremost end of a hub which supports the crank shaft thereon and a cutout is formed on the fitting



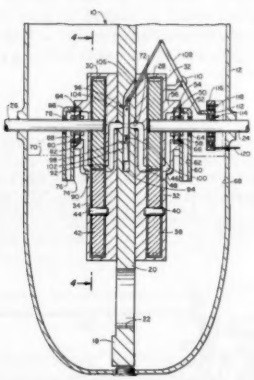
flange for accommodating member so that a driving chain for transmitting the rotation of the crank shaft to a rear wheel is prevented from coming off the lower speed sprocket wheel and can be automatically brought into engagement with the lower speed sprocket wheel even if it has slipped off the sprocket wheel.

3,835,730

HYDRAULICALLY CONTROLLED NON-SLIP DIFFERENTIAL

J. C. Pemberton, 9920 Sunset, La Mesa, Calif. 92041

Filed Aug. 4, 1972, Ser. No. 278,157
Int. Cl. F16h *35/04*
U.S. Cl. 74—650 **6 Claims**



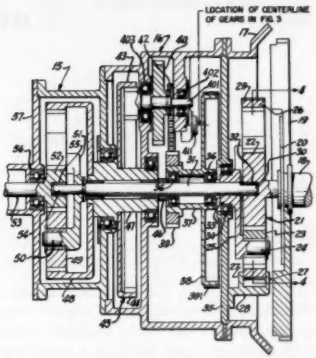
A differential mechanism wherein the power input to the differential is divided and transmitted to dual output axle shafts through a hydraulic pumping assembly, the hydraulic pumping assembly being composed of a separate pump for each axle shaft. The outputs of the two pumps are interconnected through a manually operable valve to close the flow between the outputs of the two pumps. If free fluid flow is permitted between the outputs of the pumps, the differential mechanism functions as a conventional differential. If the flow between the outputs of the two pumps is blocked by the valve, the differential action is deleted and the engine is geared directly to each driving wheel.

3,835,731

POWER TRANSMISSION APPARATUS

William S. Herzog, 18800 Almaden Rd., San Jose, Calif. 95120

Continuation-in-part of Ser. No. 77,594, Oct. 2, 1970, abandoned. This application Aug. 18, 1972, Ser. No. 281,912
Int. Cl. F16h *37/06, 57/10*
U.S. Cl. 74—682 **4 Claims**



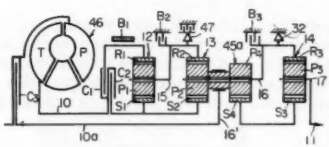
Power transmission apparatus including conventional means for enabling manual or automatic shifting of ratios from a suitable low gear ratio to a direct drive ratio and an internal overdrive means for enabling the drive ratio to vary automatically in accordance with the vehicle load so that the relationship between vehicle load and engine torque is maintained in the most favorable condition at all points in the cruise range. This is accomplished by means of an additional reaction gear train which automatically varies the overdrive ratio in accordance with the applied load.

3,835,732

GEAR TRAIN ARRANGEMENTS

Yoichi Mori, Yokohama; Nobuo Okazaki, Chigasaki; Kunio Ohtsuka, and Tetsuya Iijima, both of Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Division of Ser. No. 30,496, April 21, 1970, Pat. No. 3,701,293. This application Sept. 13, 1972, Ser. No. 288,552
Claims priority, application Japan, July 14, 1969, 44-55068
Int. Cl. F16h *47/08, 57/10*
U.S. Cl. 74—688 **4 Claims**

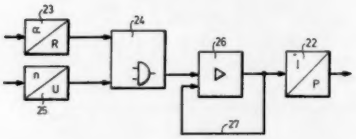


Gear train arrangements for transmitting a power from a driving source to a driven member at more than three speeds in one direction and another speed in the opposite direction, the gear train arrangements using basically three planetary gear sets and at least five friction elements such as clutches and brakes which are selectively actuated to selectively engage the rotary members of the three planetary gear sets to deliver an output power at the above said speeds. The gear train arrangements are specifically adapted for use in an automatic transmission system of a motor vehicle using a torque converter or fluid coupling.

3,835,733
INTERNAL COMBUSTION ENGINE TORQUE MEASURING APPARATUS PROVIDING AN ELECTRICAL CONTROL SIGNAL

Bert Wurst, Moglingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 20, 1972, Ser. No. 299,516
Claims priority, application Germany, Dec. 22, 1971, 2163808
Int. Cl. B60k *21/00*
U.S. Cl. 74—866 **12 Claims**

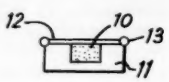


A control valve which varies the hydraulic pressure of an automatic transmission in proportion to the engine torque, instead of being controlled by the intake manifold vacuum, is controlled by an electrical signal which is a composite of a signal proportional to engine speed, and a signal representative of the position of the accelerator pedal. Engine speed signals are derived from distributor signals, the speed signals then being modulated by a factor dependent upon the position of the accelerator pedal or of the throttle.

3,835,734
CUTTING TOOLS

George Arthur, and Derek James Brown, both of Newcastle-upon-Tyne, England, assignors to International Research & Development Company Limited, Fossway, Newcastle upon Tyne NE6 2YD, England

Filed July 11, 1972, Ser. No. 270,628
Claims priority, application Great Britain July 14, 1971, 33111/71, Nov. 26, 1971, 55049/71
Int. Cl. B21k *21/00*
U.S. Cl. 76—101 A **4 Claims**



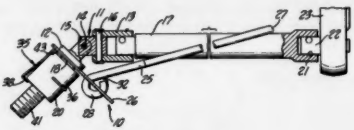
A method of manufacturing a cutting tool such as a hacksaw blade in which a tool steel body in solid or powder form is encased in a low alloy steel container and hot rolled to develop a bond between the body and the container, after which part of the container is machined away to expose a tool steel cutting edge.

3,835,735
MANEUVERING ACCESSORY FOR U-JOINT OF SOCKET WRENCHES

Harry A. Carr, 2934 Camintio, La Crescentia, Calif. 91214

Continuation-in-part of Ser. No. 159,800, July 6, 1971, abandoned, which is a continuation-in-part of Ser. No. 9,810, Feb. 9, 1970, abandoned. This application Jan. 4, 1973, Ser. No. 320,867
Int. Cl. B25b *13/00*
U.S. Cl. 81—177 UJ **10 Claims**

A two-piece manipulating accessory adapted to be detachably coupled to the shank of any conventional socket wrench U-joint by the socket fitting and including a handle manipulatable lengthwise of the wrench handle to pivot a

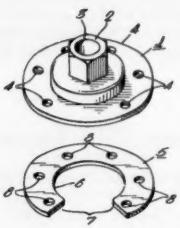


socket fitting mounted on the shank thereby to guide the socket relative to fasteners located in cramped and remote locations.

3,835,736
VALVE ACTUATING MEANS

George E. Campbell, Jr., Glen Riddle, and Julius Lerner, Broomall, both of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Mar. 14, 1973, Ser. No. 341,225
Int. Cl. B25b *13/58*
U.S. Cl. 81—180 R **6 Claims**

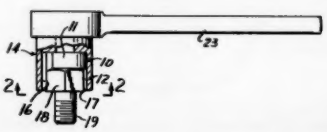


A rigid adapter member, provided with a non-circular wrenching surface which is adapted to mate with a similar non-circular wrenching surface provided in a ratchet wrench, is non-rotatably secured to the handwheel of a valve which is to be actuated.

3,835,737
KEEPER FOR SOCKET WRENCHES

Harry A. Carr, 2934 El Caminito, La Crescenta, Calif. 91214

Continuation of Ser. No. 187,684, Oct. 8, 1971, abandoned. This application June 8, 1973, Ser. No. 368,211
Int. Cl. B25b *13/58*
U.S. Cl. 81—180 R **13 Claims**



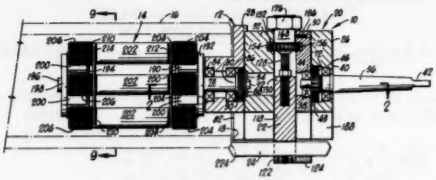
A keeper accessory for use on a conventional wrench socket without need for alterations to hold a fastener captive in the socket while being manipulated into and out of an assembly position. The one-piece resilient accessory is frictionally engageable with the interior wall surface of the socket to retain the accessory in place and includes an extension positioned to have compressive frictional engagement with the hex face of a fastener to hold the latter seated in the wrench socket deliberately released therefrom.

3,835,738

INTERNALLY MOUNTING PIPE BEVELING MACHINE

Jerome B. Kellum, and Bill Smith, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Aug. 13, 1973, Ser. No. 387,779
Int. Cl. B23b *3/24*
U.S. Cl. 82—4 C 8 Claims



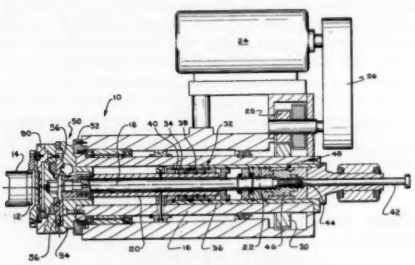
A machine for beveling or otherwise finishing the end face of a pipe. The machine includes a supporting assembly positionable within the pipe for securely fastening the machine to the pipe in response to the application of rotary driving power to the machine. The machine further includes a planetary gear train for revolving a cutting tool about an axis coaxial with the axis of the pipe, and a tool driving gear train responsive to the planetary gear train for providing radial advance of the cutting tool along the end face of the pipe simultaneously with the revolution of the cutting tool by the machine.

3,835,739

MACHINING APPARATUS

James C. Trees, Sterling Heights, Mich., assignor to LaSalle Machine Tool, Inc., Warren, Mich.

Filed June 15, 1973, Ser. No. 370,474
Int. Cl. B23b *5/00, 3/00, 3/28*
U.S. Cl. 82—20 13 Claims



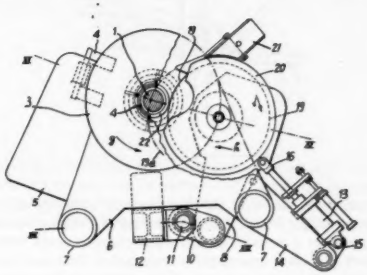
Apparatus for machining parts, such as pistons, comprising a main spindle having an axis, a tool holding head movably mounted on one end of the spindle, a plurality of tools mounted in a circular formation on the head at positions spaced radially outwardly from the axis and a cross slide for moving the head transversely of the axis so that the tools thereon are movable between concentric and eccentric positions relative to the spindle axis. When the tools are in their concentric positions, a workpiece can be centered on the spindle axis in a clearance relation with the tools. When the cross slide is actuated to move the tool head toward the eccentric position, one of the tools is moved into machining engagement with the workpiece. The tool head is rotatable on the spindle to index the tools and is readily removable from the spindle for tool replacement purposes.

3,835,740

METHOD AND APPARATUS FOR CUTTING INTO SECTIONS THE CASTINGS PRODUCED BY A CONTINUOUS ROTARY CASTING MACHINE

Pierre Peytavin, Neuilly-sur-Seine, and Louis Babel, Savigny-les-Bois, both of France, assignors to Societe Civile d'Etudes de Centrifugation, Paris, France

Filed Jan. 31, 1972, Ser. No. 222,080
Claims priority, application France, Feb. 5, 1971, 71.03953
Int. Cl. B23b *1/00, 37/00;* B22d *23/00*
U.S. Cl. 82—47 3 Claims



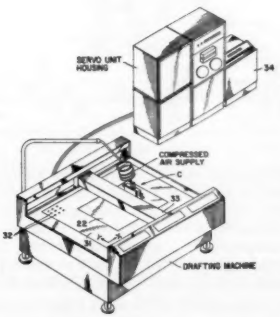
Method and apparatus for cutting into sections a metal casting being continuously withdrawn from a rotary continuous casting machine by utilizing a rotary saw which advances parallel to the casting and is biased against the casting so as to produce an annular cut of increasing depth until the section is severed.

3,835,741

DEVICE FOR CUTTING SHEET MATERIAL

Gunnar Walter Anderson, and Willie Eriksen, Oslo, both of Norway, assignors to Sentralinstitutt for industrielli forskning, Oslo and A/S Kongsberg Vapenfabrikk, Kongsberg, both of, Norway, part interest to each

Filed June 15, 1972, Ser. No. 263,290
Claims priority, application Norway, June 16, 1971, 2266/71
Int. Cl. D06h *7/00;* B26d *1/10*
U.S. Cl. 83—71 6 Claims



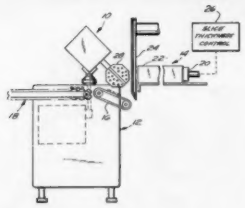
A cutterhead for mounting in a numerically controlled machine moving the head in a desired path along a cardboard or thin metal sheet material. The cutter head has a cutting tool in the form of a punch having a circular cross-section and reciprocating at a frequency of at least 25,000 cycles per minute.

3,835,742

APPARATUS FOR STACKING AND WEIGHING SLICED FOOD PRODUCTS

Robert J. Spooner, Essex, Conn., assignor to Cashin Systems Corp., Williston Park, N.Y.

Filed Aug. 22, 1972, Ser. No. 282,651
Int. Cl. B26d 4/56
U.S. Cl. 83—77 4 Claims



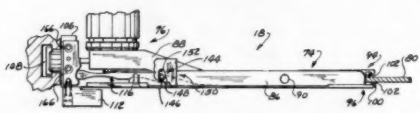
Apparatus is provided for stacking and weighing slices of cold cuts coming from the discharge end of a slicing machine. The apparatus is initially set to receive slices in stack form on a stacker. A scale is operatively connected to the stacker to register the weight after a preselected amount of slices are collected on the stacker. In one embodiment the scale actuates the stacker to transfer the stack of slices when it attains the desired weight. The scale in another embodiment serves to feed back appropriate signals to the feeding mechanism of the slicing machine to adjust sliced thickness to compensate for over or under weight slices or stacks registered by the scale. In this embodiment a preset count of slices are stacked before the weight is registered. The scale may also serve to actuate a reject mechanism for isolating those stacks not within the prescribed weight tolerances.

3,835,743

PUNCH PRESS WORKHOLDER

Victor E. Taylor, Phoenixville; Wallace R. Choate, Norristown; Stanley Banachowski, Collegeville; Robert W. Johnson, Philadelphia, and Robert C. Faison, Ridley Park, all of Pa., assignors to The Warner & Swasey Company, Cleveland, Ohio

Filed June 6, 1973, Ser. No. 367,523
Int. Cl. B26d 7/02
U.S. Cl. 83—146 13 Claims



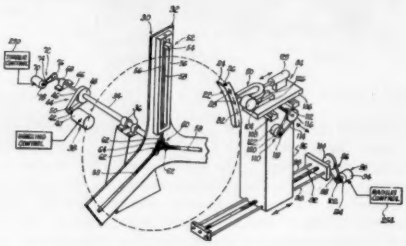
An improved punch press workholder has a relatively high flexural rigidity in the X and Y directions and a relatively low flexural rigidity in the Z direction. The high flexural rigidity of the workholder in the X and Y directions enables it to hold a work sheet accurately in place during punching operations. The low flexural rigidity in the Z direction enables the work sheet to assume a proper position relative to a die under the influence of forces applied to the work sheet by a punch. The workholder includes a gripper having an upper or movable pivot arm which is pivotally connected with a lower or fixed pivot arm. A resiliently yieldable connection is integrally formed with the fixed pivot arm and connects the fixed pivot arm with a rigid base. The resiliently yieldable connection has a generally rectangular cross-sectional configuration with a small dimension measured in a direction parallel to the Z axis and a relatively large dimension measured in a direction parallel to the X axis so that the yieldable connection has a high flexural rigidity in the X direction and a low flexural rigidity in the Z direction.

3,835,744

MACHINE FOR FORMING HOLES IN ANGLE RINGS OR THE LIKE

William H. Wendt, III, River Forest, Ill., assignor to Chicago Metal Mfg., Co., Chicago, Ill.

Filed Mar. 12, 1973, Ser. No. 339,821
Int. Cl. B26d 5/20, 5/30, 7/06
U.S. Cl. 83—267 30 Claims



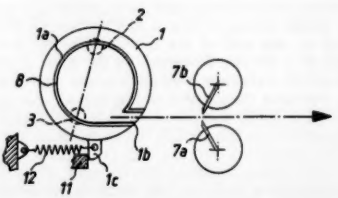
The disclosed machine comprises a rotatable indexing head for holding an angle ring or the like preferably in a vertical plane. The indexing head is rotatable about a horizontal axis and is provided with a motor drive whereby the indexing head can be turned to successive positions at which holes are to be formed in the angle ring. Three jaws are slidably mounted on the indexing head to engage and clamp the ring. The jaws are operated by lead screws fitted with bevel gears which engage an axial bevel gear having a motor drive for operating the jaws. A punch or other suitable device is provided to punch the successive holes. The punch is mounted on a set of compound carriages whereby the punch can be moved radially and axially into and out of punching relation to the ring. The carriages are power operated and are arranged so that the pitch circle radius of the holes can be precisely controlled. An automatic electronic control system may be employed to control the indexing, clamping and punch positioning drives.

3,835,745

ARRANGEMENT FOR UNLOADING A FILM CARTRIDGE

Prithwis Basu, Munich; Guenter Neumann, Gruenwald, and Jani Gaudek, Sallach Nr., all of Germany, assignors to AGFA Gevaert AG, Muenichen, Germany

Filed Nov. 1, 1973, Ser. No. 414,616
Claims priority, application Germany, Nov. 2, 1972, 2253707
Int. Cl. G03d 15/00
U.S. Cl. 83—285 8 Claims



A receiver is dimensioned to coaxially accommodate a film cartridge and is provided with a slot-shaped opening which re-

gisters with an outlet slot of the film cartridge when the cartridge is so accommodated in the receiver. The receiver is pivoted for pivotal movement about an axis which is laterally offset with reference to the axes of the receiver and the cartridge, and a cutting arrangement is provided outside the opening of the receiver in the path of the film being withdrawn through the same. The cutting arrangement is connected with the receiver in such a manner that when the receiver pivots beyond a certain extent under the pull of film being withdrawn, the cutting arrangement will cut the film.

3,835,746

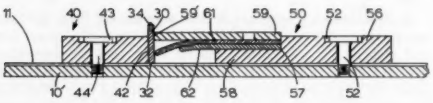
DIE ASSEMBLY AND RULE MOUNTING MEANS THEREFOR

William O. Young, Jr.; Ebun A. Surka, and Walter J. Quattlebaum, all of Spartanburg, S.C., assignors to Young Engineering Inc., Spartanburg, S.C.

Filed Apr. 30, 1973, Ser. No. 355,465

Int. Cl. B26f 1/38

U.S. Cl. 83—346 **26 Claims**



An improved die assembly having easily replaceable rule is disclosed and claimed herein. A plate or roll directly receives one or more sections of rule according to a predetermined design or shape. The rule is thin elongated strip metal having a flat underside and a upperside that is sharp, radiused or otherwise prepared to perform a particular function on a material. The flat underside of the cutting rule is directly in contact with the backing plate or roll or a resilient cover positioned thereon. Removable, resilient mounting means apply a spring force against the rule to hold same against a rigid support in proper position for die cutting, creasing or the like. Removability of the resilient mounting means permits ready replacement of damaged or dulled cutting rule without any undue expense or appreciable production loss. Mounting means for the rule are also claimed, and include a rigid support and a resilient support to receive rule therebetween. The resilient support has at least one spring secured thereto and extending outwardly therefrom. The end of the support when in position defines the thickness of the rule and the spring system extends outwardly therefrom. The spring system is deformed by the rule upon insertion of the rule from above and continually applies a spring force against the rule to hold same in place.

3,835,747

FABRIC WEB HOLD-DOWN APPARATUS FOR TAILORING MACHINES

Bruno Bystron, Ingolstadt, Germany, assignor to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

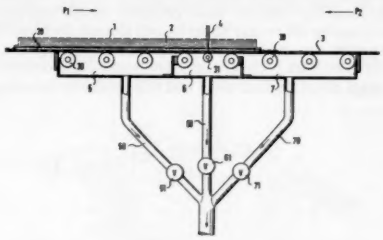
Filed Aug. 1, 1973, Ser. No. 384,562

Claims priority, application Germany, Aug. 5, 1972, 2238746

Int. Cl. D06h 7/24

U.S. Cl. 83—422 **3 Claims**

A fabric lay-up is held against the upper side of a porous carrier adjacent to a cutting tool by suction applied by vacuum chambers at the opposite carrier side. A series of vacuum chambers are located adjacent to the cutting tool, each being partially evacuated to a different subatmospheric pressure than adjacent chambers, the most reduced pressure being in the chamber directly opposite the cutting tool. The subatmospheric pressures in the other chambers are always higher fore and aft of the lowest pressure chamber. The carrier may be reciprocated, and the vacuum chamber series may be fixed relative to the cutting tool in the direction of carrier reciprocation. Alternatively, the cutting tool may be reciprocable



relative to a stationary vacuum chamber series, and chamber-evacuating means may be operable to change the absolute subatmospheric pressures, though not their relative pressure differentials, in synchronism with such reciprocation.

3,835,748

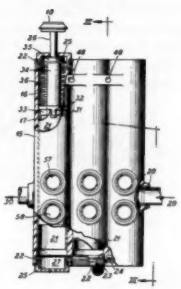
MUSICAL INSTRUMENT

Robert Dale Olson, Fullerton, Calif., assignor to Chicago Musical Instrument Co., Lincolnwood, Ill.

Filed Jan. 26, 1973, Ser. No. 326,614

Int. Cl. G10d 7/10

U.S. Cl. 84—388 **9 Claims**



A musical instrument such as a trumpet has a mouthpiece crook and a bell crook that can be selectively manually detached from a unified valve assembly which employs a unitary molded plastic housing having separate lined bores for the valves.

3,835,749

WEAPON LAUNCHING ROCKETS AND METHOD TO USE THE SAME

Pierre Andre Joneaux, Avenue Pinel 6, Asnieres, France

Filed Oct. 25, 1963, Ser. No. 319,074

Claims priority, application France, Oct. 26, 1962, 913553

Int. Cl. F41f 3/04

U.S. Cl. 89—1.8 **1 Claim**

A weapon including in combination, a rocket launcher and a gun attached to said launcher with its axis parallel to that of

the launcher to move with said rocket launcher, an artillery tracer projectile for firing from said gun constructed to be crushed upon impact with a target to deposit tracer material thereon which continues to burn, and a rocket provided with guidance means for following said tracer projectile through the entirety of its path to impact the position of said deposited tracer material, wherein said guidance means comprises means rotating the rocket about its axis through its trajectory and at least two guidance devices each including a pair of aerodynamic flaps externally and symmetrically arranged on the rocket about an axial plane and independently movable, a

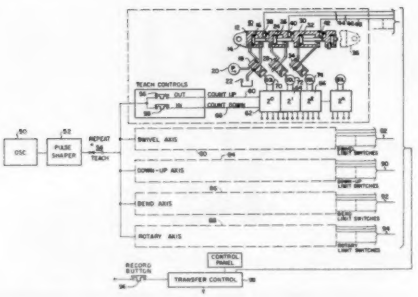
lens positioned on said rocket with its optical axis parallel to the axis of the rocket to receive radiant energy from said tracer material as the rocket is launched to follow the path of said projectile, two radiant energy detector cells each symmetrically placed upon two equal sectors of one circle located in the focal plane of said lens with planes identical to that of the corresponding said aerodynamic flaps, insulating sectors smaller than said detector cells spaced between the cells on said circle, amplifiers coupled to the two cells, and control means responsive to the amplifiers for moving said corresponding flaps proportional to the currents generated in the respective detector cells.

3,835,750

RECORD-PLAYBACK MANIPULATOR SYSTEM UTILIZING HYDRAULIC MICROBIT ACTUATORS

Maurice J. Dunne, Fairfield, Conn., assignor to Unimation, Inc., Bethel, Conn.

Filed May 14, 1973, Ser. No. 359,697
Int. Cl. F15b *11/18*
U.S. Cl. 91—35 **11 Claims**



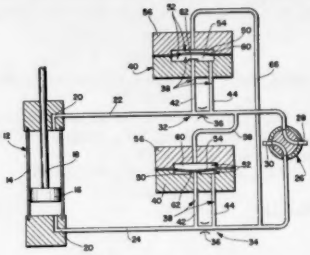
A pulse generator common to all of the controlled axes of the manipulator arm is employed to develop a stream of pulses which may be selectively applied to the count up or count down lead of a bidirectional counter. Individual stages of the counter control individual pressure sensitive hydraulic actuators which are arranged in a series and have binary related strokes. Accordingly, the arm is moved in each axis in response to the pulse stream and at a rate corresponding to the rate of occurrence of pulses in said stream during the initial teaching operation. A series of limit switches are employed to detect the physical position of the series of actuators during the repeat mode of operation of the manipulator. These limit switches are also employed to set each bi-directional counter to an initial setting corresponding to the physical position of the arm on start up so that undesired movement of the arm at start up time is avoided.

3,835,751

FLUID OPERATED SYSTEM

Larry Clyde Cowan, Jamestown, R.I., assignor to Leesona Corporation, Warwick, R.I.

Continuation of Ser. No. 186,845, Oct. 6, 1971, abandoned.
This application July 5, 1973, Ser. No. 376,589
Int. Cl. F15b *11/08, 13/042*
U.S. Cl. 91—420 **4 Claims**



A fluid operated system controls a reversible fluid operated apparatus and is herein described in the form of a speed control system for a reversible motor such as a double-acting cylinder housing a piston. The piston is selectively driven in either of opposite directions by a pressurized operating fluid introduced into one end of the cylinder while the opposite end of the cylinder is vented. Control devices in conduits opening into opposite ends of the cylinder regulate the piston speed. If desired only one of the conduits may be provided with a control device so that the piston moves at maximum speed in one direction and more slowly in the opposite direction.

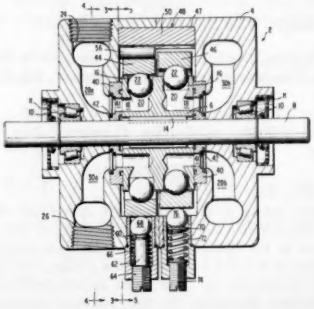
Each control device includes a restriction to the flow of fluid through the associated conduit, and has a by-pass with a fluid piloted diaphragm valve about the restriction, the fluid pilot operatively communicating with the opposite conduit. When operating fluid passes through one of the conduits to operate the cylinder, the valve associated with the other conduit is piloted closed so that fluid vented from the cylinder passes through the restriction of the other conduit, thus retarding the venting rate of the fluid and slowing movement of the piston. If desired, one or both restrictions may be of a variable type.

3,835,752

CONTROL FOR BALL PISTON FLUID TRANSMISSION DEVICE

Michael D'Amata, 1200 E. Main St., Waukesha, Wis. 53186

Filed Sept. 28, 1972, Ser. No. 292,897
Int. Cl. F01b *13/06*
U.S. Cl. 91—492 **5 Claims**



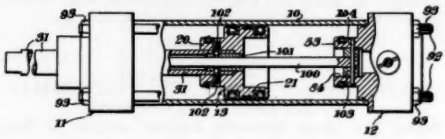
A ball piston pump or motor having in the rotor thereof two rows of cylinders is provided with two reaction rings which en-

gage against a swivel so that one reaction ring causes the pistons engaging it to move oppositely from the pistons engaging the other ring. A control for the reaction rings determines stroke length and maximum pressure.

3,835,753
AIR CYLINDER

Alan Donald Bunyard, Burrell Rd., Haywards Heath, Sussex, England

Filed Sept. 19, 1972, Ser. No. 290,322
Int. Cl. F01b *11/02*
U.S. Cl. 92—85 **8 Claims**

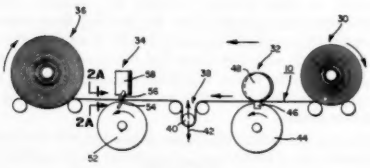


An air cylinder whose piston has a male boss and a female recess which are coaxial and which coact with complementary female recess and male boss, respectively, on the relevent end caps to provide cushioning. Two air ports are formed in each end cap and connecting tubes connect the air port in one end cap to the opposite end of the cylinder via the other end cap. The air ports not required are blanked off with screwed plugs. Thus, air connections can be made to either end cap.

3,835,754
METHOD FOR CREATING LINES OF WEAKNESS IN THREAD-REINFORCED STRUCTURES

Roman Lewyckyj, Philadelphia, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Division of Ser. No. 91,240, Nov. 20, 1970, Pat. No. 3,716,132. This application Dec. 29, 1972, Ser. No. 319,862
Int. Cl. B31d *3/00*
U.S. Cl. 93—1 TS **11 Claims**

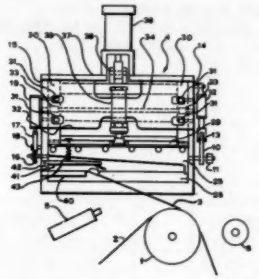


A laminated structure comprising at least one ply of cellulosic wadding with reinforcing threads secured thereto has a plurality of spaced lines of perforations separating discrete sheets of the laminated structure. Each line of perforations is defined by a series of spaced, discrete cuts spaced apart by uncut regions. The tensile strength of segments of reinforcing threads disposed in the uncut regions is substantially lower than the tensile strength of segments of reinforcing threads disposed outside of the uncut regions to thereby define lines of weakness along the lines of perforations. Method and apparatus for creating the above-described lines of weakness in the laminated structure by applying a crushing force in at least uncut regions to substantially weaken the segments of reinforcing threads disposed in the uncut regions.

3,835,755
BAG TIE DISPENSER

Elwyn David Jones, Beloeil, Quebec, Canada, assignor to Canadian Industries Limited, Montreal, Quebec, Canada

Filed Mar. 21, 1973, Ser. No. 343,451
Claims priority, application Great Britain, Apr. 10, 1972, 16401/72
Int. Cl. B31b *1/90*
U.S. Cl. 93—8 WA **8 Claims**

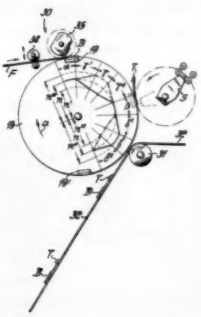


An apparatus that cuts a strip of plastic film from a length of film advanced by a film metering device, applies a drop of adhesive to the strip and forces the adhesives bearing side of the strip into contact with the surface of a plastic bag, thus providing an attached bag tie. The apparatus is suitable for use at the output of a bag making machine, means being provided to attach the bag tie to a moving bag in correct register with the bag mouth.

3,835,756
BAG-MAKING MACHINE

Frank Bosse, Ibbenburden-Dorenthe, Germany, assignor to Windmoller & Holscher, Lingerich, Germany

Filed Oct. 4, 1973, Ser. No. 403,484
Claims priority, application Germany, Oct. 4, 1972, 2248613
Int. Cl. B31b *1/86*
U.S. Cl. 93—8 WA **8 Claims**



In the manufacture of carrier bags, a continuously travelling web of bag-making material is provided at intervals with carrier handles which are stuck thereto by means of reinforcing sheets. The reinforcing sheets are successively fed to a rotary transfer drum with which the web of bag-making material is in contact. The reinforcing sheets are coated with adhesive on one side. During rotation of the transfer drum, and before each reinforcing sheet makes contact with the web of bag-

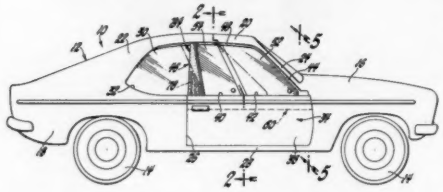
making material, a carrying handle is fed to the transfer drum at the location where a reinforcing sheet is being held on it. To enable the pitch of the carrying handles on the web to be varied without changing the transfer drum, the latter is turned by variable gearing.

3,835,757

VEHICLE BODY CONSTRUCTION

Horacio Shakespear, West Bloomfield, and James A. Steele, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 5, 1973, Ser. No. 338,308
Int. Cl. B60h *1/24*
U.S. Cl. 98—2 **2 Claims**



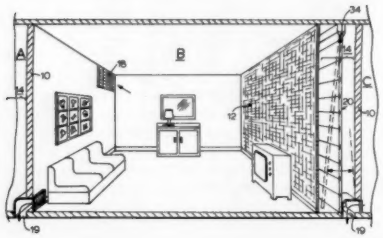
A body construction wherein vehicle structural, fresh air ventilation, heating, and side window defrosting are performed by a single element. In particular, a side guard beam rigidly disposed on the door of the vehicle defines a closed conduit. Fresh air intake louvers on a rear frame portion of a window opening in the door convey fresh air from outside the vehicle into the closed conduit which then conveys the fresh air to the interior of the vehicle through a plurality of ducts. Also, heated air from the vehicle's heater is conveyed to the closed conduit which then transmits the heated air to either the interior of the vehicle and/or the side windows through a plurality of adjustable diffusers. Concurrently, in the closed position of the door, the beam functions to maintain the integrity of the passenger compartment against side impact loading.

3,835,758

DWELLING SPACE AIR CONDITION CONTROL AND AIR CHANGE CONTROL SYSTEM

John B. Bean, 120 Henning Dr., Orchard Park, N.Y. 14127

Filed Sept. 13, 1973, Ser. No. 397,171
Int. Cl. F24f *13/00*
U.S. Cl. 98—33 **17 Claims**



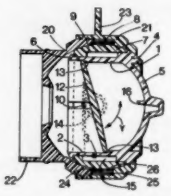
Inside of or adjacent to one end or other wall of a dwelling room or the like there is provided an air-pervious "false" wall spaced in advance of the true wall thereof, thereby defining therebetween a plenum space. Throughout a substantial portion of its extent the false wall comprises a readily air-pervious fabrication, such as for example an extremely loosely woven fabric of natural or synthetic fibers or wire strands or the like; or a parallel strand curtain; or some other highly perforate fabrication such as a punched sheet member or the like. In any case the false wall is preferably decoratively equivalent to the viewed surface of a conventionally decorated room wall. Supply air inlet means are provided in one-way open system communication with the plenum space; the air supply thereto being beneficiated/"conditioned" (heated, cooled, humidified, dehumidified, filtered, etc.) either externally of or within the plenum space. The invention features provision within a plenum space as aforesaid a positive air displacement/transport device which only leisurely moves the beneficiated air through the false wall and thence through the dwelling spaced towards an outlet remote from the false wall. Because of its air-pervious nature the false wall "breathes" a room-wide diffused supply of suitably beneficiated air into and through the room for temperature/humidity/filter control thereof; silently, and without perceptible draft effects.

3,835,759

VENTILATING NOZZLE INCLUDING A UNIVERSALLY SWIVELLABLE NOZZLE MEMBER

Jeffrey Neil Lloyd, Bedworth, England, assignor to Clear Hooters Limited, Bedworth, Warwickshire, England

Filed Mar. 27, 1973, Ser. No. 345,273
Claims priority, application Great Britain, Apr. 4, 1972, 15309/72
Int. Cl. F24f *13/00*
U.S. Cl. 98—40 A **6 Claims**



A ventilating nozzle in which a tubular nozzle member is swivellable universally in a tubular housing. The nozzle member contains an obturating member adjustable to vary the effective flow of air through the nozzle member. A sleeve mounted on the nozzle member for relative rotation therebetween but restrained by the housing from rotational movement about its axis is connected by gearing to the obturating member, whereby rotational movement of the nozzle member within the sleeve will effect opening or closing of the obturating member according to the direction of the rotational movement.

3,835,760

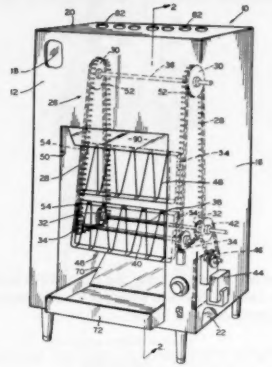
APPARATUS FOR TOASTING BREAD-LIKE ARTICLES

John F. Rekesius, Point Pleasant, N.J., assignor to Savory Equipment, Inc., Neptune, N.J.

Filed Apr. 9, 1973, Ser. No. 348,922
Int. Cl. A47j *37/08*
U.S. Cl. 99—331 **18 Claims**

Apparatus for toasting bread-like articles is disclosed comprising a housing providing a toasting chamber in which electrical heating elements are disposed together with an endless conveyor operable to receive and carry articles to be toasted past the heating elements. The housing has an entrance opening for introducing articles onto the conveyor and when the articles have been toasted they are discharged from the conveyor for removal from the apparatus. The housing is provided with a discharge opening in the top wall thereof and adjacent the rear wall of the housing, and a flue arrangement is pro-

vided within the housing to induce hot air in the housing to flow through the discharge opening. Flow of hot air through the flue induces ambient air to flow into the toasting chamber through the product entrance, beneath the conveyor and heat-



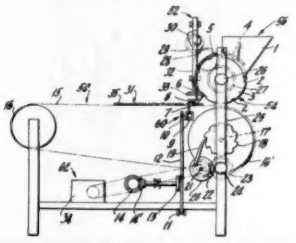
ing elements and thence upwardly toward the top of the chamber. A temperature sensing element is disposed in the housing in the path of ambient air flow and is responsive to the temperature sensed to cause energization and de-energization of the heating elements.

3,835,761

SKEWERING MACHINE

Takeharu Yamanaka, No. 1-26, 3 Chome Inchinotani-cho, Suma-Ku, Kobe City, Japan

Filed June 18, 1973, Ser. No. 370,843
Int. Cl. A47j *37/04*
U.S. Cl. 99—421 H **5 Claims**



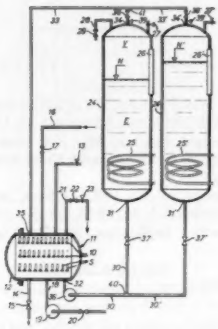
A machine for skewering pieces of materials, particularly foods such as meat, onions, etc., comprises a first conveyor having a series of supporting plates for receiving the material and each including guide means for guiding a skewer for movement thereacross. The plates are advanced one at a time into association with a presser which presses the material downwardly on the plate and holds the material in position while skewer rods are fed from a second conveyor into alignment with the guide means on the plates and then pushed through the material which is being pressed on the plates. The skewers are fed in succession from a hopper supply onto the second conveyor where the skewers are arranged in spaced relationship and fed by the second conveyor into association with a slide mechanism which pushes each skewer transversely through a guide of a guide plate carrying the material to be skewered and which is located at a presser station. The conveyors and the skewer supply system and the presser are all driven in timed relationship by a single drive motor.

3,835,762

DEVICE FOR THE STERILIZATION OF FOOD PRODUCTS IN FLEXIBLE PACKAGES

Michel Rambaud, Paris, France, assignor to Etablessements Gatineau S.A., Villers-Cotterets, France

Filed Mar. 10, 1972, Ser. No. 233,462
Claims priority, application France, Mar. 29, 1971, 71.10877, July 12, 1971, 71.25427
Int. Cl. B65b *55/02*; A23l *3/12*
U.S. Cl. 99—483 **9 Claims**



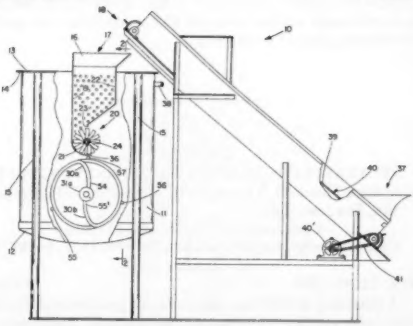
A device for the sterilization of food products in flexible packages, e.g., preserves, comprising at least one autoclave adapted to hold said preserves for treatment, in which the said autoclave is associated with two hermetically-closed heated tanks intended to be partly filled with water, upper conduits and lower conduits being provided for coupling respectively together the top portions and the bottom portions of said autoclave and said tanks, and further comprising pumping means adapted to effect the circulation of hot water in a closed pressurized circuit through the said autoclave, so as to effect a heat treatment in two successive periods and at two different temperatures. The apparatus is particularly suitable for the treatment of raw scraped potatoes packed under vacuum in transparent plastic bags.

3,835,763

METHOD AND APPARATUS FOR OBTAINING TOMATO JUICE WHILE MINIMIZING ENZYMIC ACTION

Walter L. Prosser, Indianapolis, Ind., assignor to F. H. Langsenkamp Company, Indianapolis, Ind.

Filed Jan. 23, 1973, Ser. No. 326,116
Int. Cl. A23n *1/02*
U.S. Cl. 99—495 **5 Claims**



A method and apparatus for obtaining juices from tomatoes by heating the tomatoes to minimize enzymic action. The

method includes the steps of heating the tomatoes to a minimum temperature of 190° Fahrenheit or higher and then chopping the tomatoes so as to allow the juices to flow into a vat. The apparatus has a rotatable heating element mounted within a vat receiving the tomatoes through a chute. A rotating cutter is mounted to the vat immediately adjacent the bottom open end of the chute and immediately above the heating element. A conveyor drops the tomatoes into the chute which are then heated by the heated juices circulated within the vat prior to cutting.

3,835,764

APPARATUS FOR PRODUCING FROZEN MEAT CUBES, HAMBURGERS AND SIMILAR UNITS

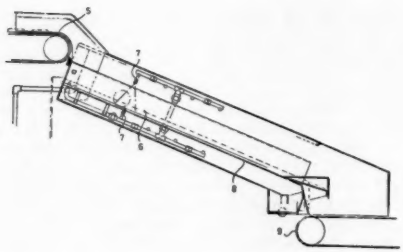
Goran Stig Londahl, and Lars Inge Eek, both of Halsingborg, Sweden, assignors to Frigoscandia Contracting AB, Halsingborg, Sweden

Continuation of Ser. No. 183,347, Sept. 24, 1971. This application July 25, 1973, Ser. No. 382,507

Claims priority, application Sweden, Sept. 30, 1970, 13237/70

Int. Cl. A23l *3/36*

U.S. Cl. 99—517 **2 Claims**



An apparatus for producing frozen meat cubes, hamburgers and similar units comprises a freezing device in which the units are subjected to a reduction of temperature to far below 0°C, and a glazing device arranged after the freezing device, in which cold water is caused to freeze to a glazing on the surfaces of the units. The glazing device comprises a feeding device which imparts to the units leaving the freezing device a relative movement with respect to said device during the feed, and cold water nozzles arranged above and below the path of the feeding device for the units.

3,835,765

APPARATUS FOR DESTONING AND HALVING FRUIT

Giordano Tomelleri, Verona, Italy, assignor to FMC Corporation, San Jose, Calif.

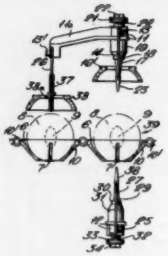
Filed Aug. 3, 1972, Ser. No. 277,910

Claims priority, application Italy, Dec. 30, 1971, 84994/71

Int. Cl. A23n *3/08*

U.S. Cl. 99—553 **3 Claims**

A destoning and halving apparatus for peaches and like fruit with large stones, comprising an intermittently travelling conveyor receiving the fruit, a first or destoning position in which two pairs of blades are partly inserted in the fruit from opposite directions to hold it firmly, a pair of forked knives, one between each pair of blades, are inserted so as to surround the stone and are then rotated to free it, whereupon the blades



and knives are removed from the fruit which is transferred to a second or halving position where it is cut completely in half by further linearly-moving blades.

3,835,766

DEVICE FOR HUSKING GRAINS

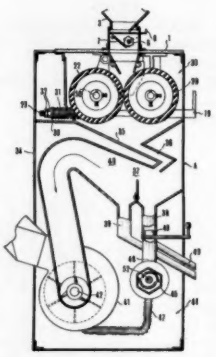
Toshihiko Satake, 2-38 Nishihon-machi, Saijyo-cho, Kamo-gun, Hiroshima-ken, Japan

Filed Mar. 29, 1972, Ser. No. 229,437

Claims priority, application Japan, Nov. 23, 1971, 46-93973

Int. Cl. A45e *41/02*

U.S. Cl. 99—618 **6 Claims**



In a device for husking grains, its support mechanism for hulling rolls and its casing defining a husking chamber, said device being assembled in its entirety as a rectangular parallelepiped.

3,835,767

REFUSE COMPACTOR

Robert A. Peterson, 8756 33rd Ave., Kenosha, Wis. 53740

Continuation-in-part of Ser. No. 254,067, May 17, 1972, abandoned. This application Aug. 10, 1973, Ser. No. 387,463

Int. Cl. B30b *15/16*

U.S. Cl. 100—53 **27 Claims**

A refuse container interiorly movably mounts a pressure plate to bear against the material being compacted, the container and plate defining a collapsable chamber. An endless seal carried at the periphery of the plate is responsive to a differential of external and internal pressures, induced by a vacuum pump that reduces the internal pressure of the enclosed volume of the collapsable chamber, to hermetically

seal the chamber to effect compacting movement of the pressure plate. A vacuum breaker means is provided to equalize the internal and external pressures after completion of a compacting cycle, e.g., after a predetermined length of compacting stroke of the pressure plate, to permit retraction of the

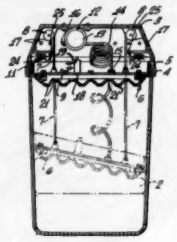


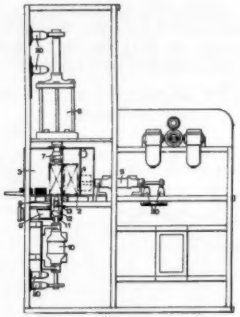
plate to a position of readiness for a successive compacting cycle. The process may be automatically controlled, e.g., by an electro-mechanical circuit. The container may be an element that is selectively separable from an assembly consisting of all the other elements of the invention.

3,835,768

CAN CRUSHERS

Leonard Kidson, Bourne End, England, assignor to Hunt Brothers (Oldbury) Limited, Worcestershire, England

Filed Jan. 12, 1973, Ser. No. 323,077
Int. Cl. B30b *9/00*
U.S. Cl. 100—94 **3 Claims**



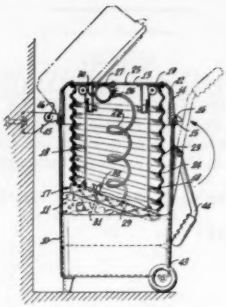
A can crusher comprises piercing means operative to pierce the underside of a metal can so as to form an opening or openings in the underside of the can, and crushing means operative to crush the pierced can so as to cause or assist in causing the contents of the can to be expelled through the opening or openings. The piercing means includes a piercing tool which is formed with an overhanging portion, preferably in the form of a barb, such that when the tool pierces the underside of the can to form an opening in it, that portion enters the can, and when the tool is subsequently withdrawn through the opening the overhanging portion pulls downwards the adjacent part of the can bordering the opening. The tool may be of symmetrical form with a tapering head, a shank of constant width, and a stock provided with a threaded stud by means of which the tool is mounted in the crusher.

3,835,769

REFUSE COMPACTOR

Robert A. Peterson, 8756 33rd Ave., Kenosha, Wis. 53140

Continuation-in-part of Ser. No. 254,067, May 17, 1972, abandoned. This application Aug. 10, 1973, Ser. No. 387,436
Int. Cl. B30b *1/32, 15/16*
U.S. Cl. 100—227 **23 Claims**



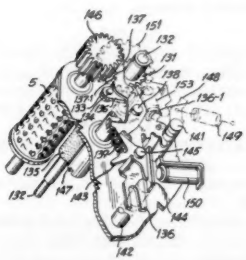
The cover of a refuse container, adapted to be sealed upon the container, is internally provided with a bellows having a pressure plate to bear against the material being compacted as the plate moves downwardly in the container in response to expansion of the bellows. The plate assembly and container define a collapsible chamber from which air is evacuated by a power means to reduce the internal pressure while air at atmospheric pressure expands the inside of the bellows. Automatic means to vent the evacuated collapsible chamber to atmosphere is provided in a control system that includes the power means to evacuate air. The container may be independent of the other elements of the invention and may be supported for translatory movement in and out of operative connection to the power means and cover whereby a plurality of containers may be employed with a single power system.

3,835,770

COMPACT FLYING PRINTER

Tadayoshi Shimodaira, Suwa, and Yoshifumi Gomi, Chino, both of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo and Shinshu Seiki Kabushiki Kaisha, Nagano-ken, both of, Japan

Division of Ser. No. 118,427, Feb. 24, 1971. This application Apr. 28, 1972, Ser. No. 248,368
Claims priority, application Japan, Feb. 27, 1970, 45-16451
Int. Cl. B41j *11/00*
U.S. Cl. 101—93 C **11 Claims**



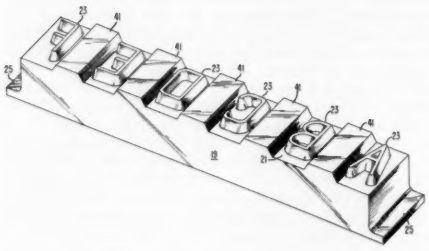
A compact flying printer having a continuously rotating print drum and ratchet wheel, a trigger lever positionable to

be struck by a tooth of said ratchet wheel and a hammer lever driven by said trigger lever and provided with a print hammer at its end. The trigger lever is formed with a linear guide portion for regulating the motion thereof and an energy transmitting portion projected for transmitting energy from said ratchet wheel to said hammer lever.

3,835,771
PRINT TRAIN PERMITTING ACCELERATED PRINTING SPEEDS IN A LINE PRINTER

John W. Funk, Plymouth; Eugene L. Merlino, Jr., Dearborn Heights; Stephen Barasch, Westland, and Daniel J. Woods, Plymouth, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 2, 1973, Ser. No. 356,393
Int. Cl. B41j *7/06*
U.S. Cl. 101—111 **4 Claims**



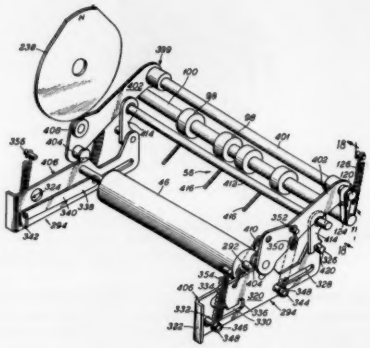
A print train of predetermined length and comprised of a plurality of type carrying blocks is provided with an increased number of hammer impactable type characters to thereby enable the realization of significantly accelerated printing speeds, the type blocks being individually and alternately driven to advance a toothed belt to which the blocks are separately coupled around a pair of rotatable sprockets, said accelerated printing speeds being realized without an accompanying degradation of printing quality resulting from the closer spacing of the adjacent characters, means being provided to shield the characters adjacent to an impacted character against the striking force of the hammer associated with such impacted character.

3,835,772
COMPENSATING IMPRESSION ROLLER MOUNT FOR STENCIL DUPLICATOR

Edward M. Springer, Chicago, Ill., assignor to Heyer Inc., Chicago, Ill.

Filed Oct. 6, 1971, Ser. No. 186,956
Int. Cl. B41l *13/06*
U.S. Cl. 101—116 **9 Claims**

A stencil duplicating machine including two independently pivotably impression roll mounting brackets which are adjustably biased to vary the contact pressure between the impression roll and the duplicator drum. The impression roll shaft is mounted with a clearance fit in the brackets so as to allow limited radial movement of the shaft with respect to the bracket to provide uniform contact pressure between the

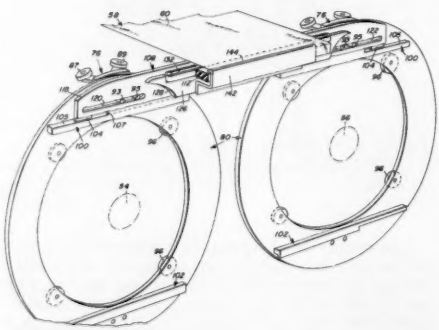


roller and the drum and to compensate for any misalignment. The shaft is also spring biased between the brackets so as to be easily removable.

3,835,773
PRINTING APPARATUS

Michael Vasilantone, 147 E. First Ave., Roselle, N.J. 07203

Filed Apr. 26, 1972, Ser. No. 247,835
Int. Cl. B41l *13/08*; **F16h** *7/10*
U.S. Cl. 101—122 **12 Claims**

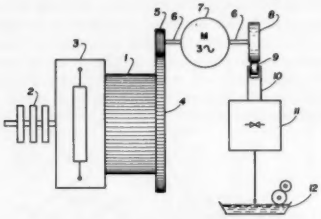


A continuous screen printing apparatus of the type having an endless screen mounted on spaced parallel cylinders for printing insignia on a flexible web supported on a movable platen adjacent said screen. Means are provided for laterally and longitudinally adjusting the tautness of the screen and for maintaining the screen taut in the area between the rolls.

3,835,774
DEVICE IN OFFSET PRINTING PRESSES FOR CONTROLLING THE SUPPLY OF DAMPENING LIQUID TO DAMPENING EQUIPMENT OF THE PRESSES

Heinrich Heidt, Neckarsteinach, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Nov. 21, 1972, Ser. No. 308,342
Claims priority, application Germany, Nov. 22, 1971, 2157778
Int. Cl. B41l 25/12; B41f 7/32
U.S. Cl. 101—148 **5 Claims**

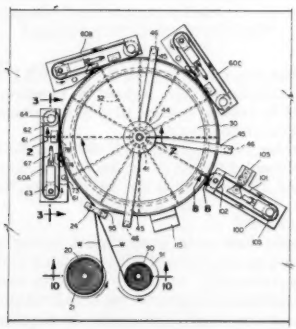


Offset printing press having a main motor and dampening equipment includes a device for automatically controlling a supply of dampening liquid to the dampening equipment. The device includes an adjusting motor which has a rotary shaft and which is connected to the main motor for controlling the rotary speed thereof, a control cam secured to the shaft, as for example, illustrated in U.S. Pat. No. 2,561,837, and control member means operatively engageable by the control cam for determining the amount of liquid supplied from a source thereof to the dampening equipment.

3,835,775
GRAVURE PRINTING PRESS WITH ENDLESS PRINTING BELTS

Robert C. Benton, 18 Canoebrook Dr., Princeton Junction, N.J. 08550

Filed Oct. 10, 1972, Ser. No. 296,003
Int. Cl. B41f 9/02
U.S. Cl. 101—151 **14 Claims**

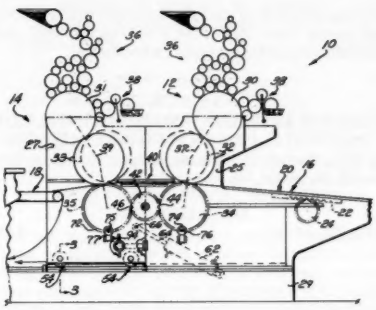


A printing press includes a large drum driven rotatably. A continuous printing web, of paper or other material, is wound about the circumferential surface of the drum and pulled by the drum from a supply reel and delivered to a driven take-up reel. A plurality of printing units are positioned about the circumferential surface of the rotatable drum at spaced-apart locations. One or more of these units may be gravure units, as for printing different colors. These gravure units include endless gravure belts driven at a speed corresponding to that of the peripheral surface of the drum. The length of the gravure belt is variable, thereby to provide a variable cut off or image length. Floating pressure rollers press the gravure belts against the printing web and against the drum periphery. Alignment means are provided for aligning the gravure belts with the drum.

3,835,776
MULTI-UNIT ROTARY PRESS

William H. Weidman, Independence, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Dec. 28, 1970, Ser. No. 101,826
Int. Cl. B41f 7/06
U.S. Cl. 101—183 **24 Claims**



A sheet fed multi-unit metal decorating press in which a pair of printing units with diverging cylinder stacks are arranged back-to-back so that sheets pass directly from unit to unit with the forward edge of a sheet entering the nip of the second unit before the rear edge of the sheet passes from the nip of the first unit. The second unit is mounted for roll-back movement relative to the first unit to facilitate make-ready and clean-up operations on the first unit. A registration adjusting mechanism is provided to shift the entire second unit relative to the first for final precise adjustment of the second unit image to the first unit image. Registry of the sheets as they pass from the first unit to the second is maintained by a transfer guide unit positioned between the two units and which directs the sheets in a generally horizontal path from one unit to the next. The guide unit defines a controlled locus over which the sheets pass and is operative to confine the sheets to the desired locus by placing a controlled bend in the sheets.

3,835,777
INK DENSITY CONTROL SYSTEM

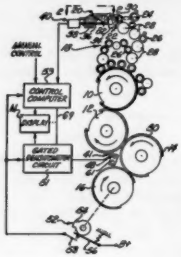
Algirdas J. Krygeris, Richmond Heights, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Jan. 16, 1973, Ser. No. 324,113
Int. Cl. B41c 7/08
U.S. Cl. 101—350 **53 Claims**

Control of ink supply in a printing press in accordance with sensing of the density of ink being printed on imprint-receiving material, wherein sensing measurements are made and smoothed by considering previous printing press cycles and wherein the smoothed measurement is compared to a desired predetermined standard density and the ink feed is adjusted accordingly.

Erratic density measurements are automatically identified and disregarded. Interaction between adjacent ink adjustment keys of the ink feed mechanism is automatically taken into ac-

count, and lift-off of keys from an ink fountain blade of the mechanism is prevented. Proportional, derivative, and integral



control signals are produced and combined to provide a composite control signal for the ink feed. The invention may be implemented by analog or digital embodiments.

3,835,778

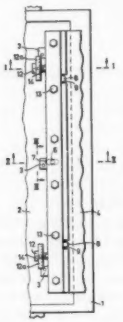
DEVICE FOR ATTACHING AND ADJUSTING FLEXIBLE PRINTING PLATES ON PRINTING CYLINDERS

Erich Bock, Dortmund, Germany, assignor to Register Systems GmbH, Dartmund, Germany

Filed Sept. 14, 1973, Ser. No. 397,365

Int. Cl. B41f *1/28*

U.S. Cl. 101—415.1 **9 Claims**



A printing plate is adjustably secured to a printing cylinder by clamping bars which are adjustably mounted in an axially extending recess of the printing cylinder and which are configured to grip opposite ends of a printing plate for assuring proper alignment of registration marks on the printing plate and on the printing cylinder. A first pair of clamping bars which are adapted to first have an edge of the printing plate clamped therebetween are equipped with a pin and slot arrangement located at substantially the longitudinal center of the clamping bars. A pair of adjustment screw means are located at opposite ends of the clamping bars to permit adjustment of the ends circumferentially of the printing cylinder. The adjustment screw means are provided with indicator means to indicate the adjusted position of the clamping bars and, after the clamping bars have been placed in their adjusted position, the slotted portion of the centrally located pin and slot arrangement is axially fixed relative to the printing cylinder. The slot is configured to extend in its longitudinal direction circumferentially of the cylinder and the pin, which is spring mounted to the clamping bars, extends radially into the slot.

3,835,779

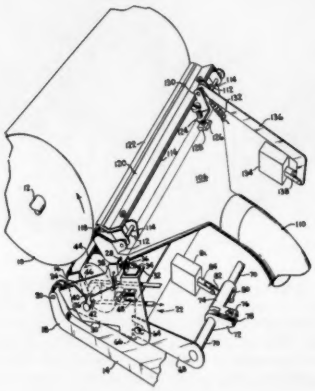
APPARATUS FOR AUTOMATICALLY CLEANING THE BLANKET CYLINDER OF AN OFFSET PRINTER

William A. Ross, Darien; John W. Bach, Stamford, and Warren E. Olson, New Canaan, all of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jan. 26, 1973, Ser. No. 327,149

Int. Cl. B41f *35/06*; B41l *41/06*

U.S. Cl. 101—425 **11 Claims**



A scrub roller which has a solvent absorbing surface is partially immersed in an ink solvent reservoir. Apparatus is provided for automatically lifting the scrub roller into engagement with the blanket roll where it rotates in an opposite direction thereto to scrub the inked surface. Thereafter, it is withdrawn and a wiper blade is automatically advanced against the surface of the blanket roll. A vacuum header adjacent the wiper blade removes the used solvent to waste.

3,835,780

PROCESS OF PRINTING BY DRIOGRAPHY

Robert F. Gracia, Scituate; Richard A. Laughrey, Woburn, and Paul F. Tuohey, Quincy, all of Mass., assignors to Itek Corporation, Lexington, Mass.

Division of Ser. No. 54,627, July 13, 1970, Pat. No. 3,807,304, and a continuation-in-part of Ser. No. 744,631, July 15, 1968, abandoned. This application May 16, 1973, Ser. No. 360,875

Int. Cl. G03f *7/02*

U.S. Cl. 101—454 **31 Claims**

A metallic base photographic plate having images adherently and preferably conductively bonded to the metallic support is produced by contacting with metal image forming materials such as a photographic physical developer and imaging medium comprising a physically developable image. A preferred process is one utilizing a copy medium capable of being rapidly processed and having a layer of a photoconductor-binder emulsion on a roughened metallic support and a physical developer capable of producing an image adherently and conductively bonded to the metallic support. The plate produced by this invention is especially useful as a printing plate, having the capability of producing high resolutions and continuous tone prints.

3,835,781
METHOD FOR OBTAINING PHOTOGRAPHIC REPRODUCTIONS IN COLOR

John Buckland Erdell, 50 Morningside Dr., Brooklyn, N.Y. 10025

Filed Mar. 13, 1972, Ser. No. 233,944
Int. Cl. B41m *5/00*; **B41n** *3/00*; **G03f** *1/00*
U.S. Cl. 101—464 **4 Claims**

Process for exhibiting and evaluating the effects of variation in dye concentration on the saturation and hue of dyes useful in color photography, dye imbibition transfer processes. The process comprises preparing a crossed step wedge on a dye transfer matrix film, dyeing the processed matrix in a given transfer dye solution, and transferring the crossed step wedge dye images to a reception material. The density, saturation and hue of any individual step of the transferred dye images is referenced to any other step of the positive dye wedge by relative exposure indicia in each step. The crossed step wedge dye positive serves as a relative exposure guide for producing positive color prints from non-color negatives using imbibition dye transfer processes.

3,835,782
PRODUCT AND METHOD

George L. Griffith, Coopersburg, and Donald W. Edwards, Lehighton, both of Pa., assignors to Commercial Solvents Corporation, New York, N.Y.

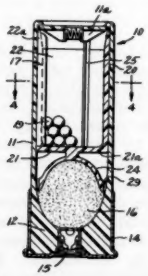
Filed Sept. 22, 1972, Ser. No. 291,171
Int. Cl. C06c *5/04*
U.S. Cl. 102—27 R **23 Claims**

An explosive device including means permitting identification of the explosive source or manufacturer even following detonation, and a method of identifying the source or manufacturer of an explosive device even after detonation thereof. A luminescent material is added to the explosive device having a non-thermal emission of electromagnetic radiation upon excitation which uniquely identifies the source or manufacturer of the explosive. The luminescent material may be pulverized and mixed with the explosive material within the device. Alternatively, the luminescent material may be added to the exterior of the explosive device. Following detonation of the explosive device, the area around the detonation is activated or excited, and the luminescent material is identified from the resulting luminescent radiation.

3,835,783
SHOT CONTAINER WAD FOR HARD SHOT

Roger J. Curran, Stratford, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Dec. 4, 1972, Ser. No. 311,689
Int. Cl. F42b *7/08*
U.S. Cl. 102—42 C **19 Claims**

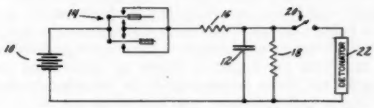


The petals of a shot container portion of a shotshell wad have internal flanges on longitudinal edges thereof. The flanges assure that the proper position of the petals will be obtained and maintained when the wad is inserted in a shotshell. The increased radial thickness at the flanges and the interaction of adjacent flanges with the shot particles prevents shot particles from squeezing through a slit and scoring the bore of a shotgun upon firing. A thin obturating cup, molded integrally to the base of the shot container, collapses against the base of the shot container to provide cushioning upon firing, seal gases behind the wad and add thickness to the base of the shot container to prevent penetration of shot particles therethrough. The minimizing of materials permitted by the multi-functional wad components allows maximum loads of powder and shot to be used.

3,835,784
MINE FUZE

Harold C. Miller; Wilbert W. Cranford, Jr., both of Chicago, and James J. Brophy, Western Springs, all of Ill., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 23, 1956, Ser. No. 599,664
Int. Cl. F42c *15/14*; **F42b** *23/26*
U.S. Cl. 102—70.2 R **2 Claims**

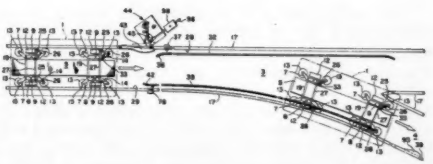


1. An anti-tank mine fuze comprising in combination: a capacitor; means responsive to vibration for applying electrical energy to the capacitor; a detonator; and means responsive to a changing magnetic field for connecting the capacitor to the detonator, said means responsive to a changing magnetic field including a frame, a rotor mounted for rotation about its axis on the frame, the rotor having a magnet and a commutator, and a brush mounted on the frame in electrical contact with the commutator.

3,835,785
SWITCHING APPARATUS FOR TRANSPORTATION SYSTEM

Gerald D. Kirschner, Akron, and William H. Woessner, Canton, both of Ohio, assignors to The Goodyear Tire and Rubber Company, Sunnit, Ohio

Filed Nov. 26, 1973, Ser. No. 418,926
Int. Cl. E01b *26/00*
U.S. Cl. 104—130 **19 Claims**



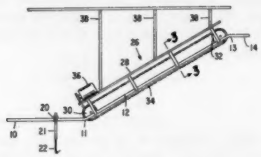
A switching apparatus for a vehicle steered by guide wheels in preloaded rolling engagement with guide rails at the sides of the vehicle path. Interconnected switch wheels at opposite sides of the vehicle are selectively directed into rolling engagement with switch rails extending along the sides of intersecting vehicle paths at the junction of the paths. A ramp on one side of the vehicle path is provided to urge the switch wheels under pressure into engagement with a switch rail on the opposite side of the vehicle. The ramp may be moved into and out of switching position by a locking toggle linkage to hold the switching position of the ramp when the ramp actuating power is off.

3,835,786

SIDE FINGER CONVEYOR

James C. McIlwain, 1215 Ridgeway Dr., Richardson, Tex. 75080

Filed Feb. 20, 1973, Ser. No. 333,535
Int. Cl. B61b *13/06*
U.S. Cl. 104—172 S **7 Claims**



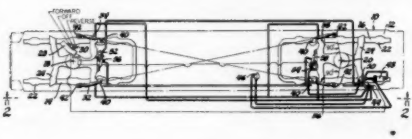
An overhead track conveyor elevator wherein a section of a rail forms a ramp in an inclined open bottom frame arch interiorly supporting the rail from one side of the arch. An endless belt is interiorly supported from the other side of the arch with one run parallel to but lower than the bottom of the rail with rigid fingers extending laterally from the belt to a location below said rail. Guide structure engages the belt from top and bottom over the length of the one run to stabilize the belt and force the fingers to follow an undeviating course below the rail. Drive means propels the belt whereby the fingers engage any depending load carried by the rail in travel between the levels of the ends of the belt.

3,835,787

RAILWAY TRUCK POSITIONING APPARATUS

Henry A. Marta, La Grange Park, Ill., and Curtis A. Swenson, Forest Lake, Minn., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 24, 1972, Ser. No. 309,170
Int. Cl. B61f *5/24, 5/50, 13/00*
U.S. Cl. 105—176 **5 Claims**



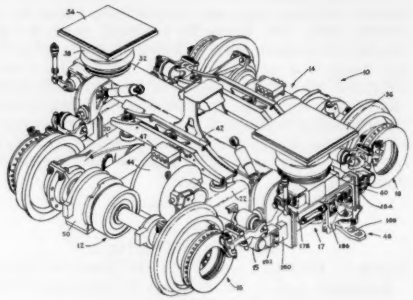
Truck guiding means for reducing flange loads of railway vehicle wheels due to skewing of the trucks during curve negotiation. In a preferred embodiment, the powered trucks of a diesel electric locomotive are connected with hydraulic cylinders controlled by a combination of pneumatic and electric control devices. The cylinders are actuated to apply guiding forces or moments to the trucks at predetermined rotational positions during curve negotiation. The guiding forces are applied in amounts and directions to oppose and reduce the frictional forces which cause skewing of the trucks during curve negotiation, thereby reducing the wheel flange and rail wear resulting therefrom. The application of the guiding forces is controlled both as a function of the direction of truck rotation in a curve and the direction of locomotive movement. The hydraulic cylinders are arranged in pairs which act simultaneously on both locomotive trucks and are located in approximate alignment with a vertical plane diagonally traversing the locomotive body. With this arrangement, reaction forces of the cylinders on the car body yield little or no rotational moments which could result in undesired transverse loads being applied to the trucks through the locomotive body.

3,835,788

ELECTRICALLY INSULATED RAILWAY CAR TRUCK

John M. Paul, Holland; William C. Heisler, Glenside, and George W. Else, Warminster, all of Pa., assignors to The Budd Company, Philadelphia, Pa.

Filed May 31, 1972, Ser. No. 258,141
Int. Cl. B60l *5/38;* **B61c** *9/50;* **B61f** *3/04*
U.S. Cl. 105—182 E **7 Claims**



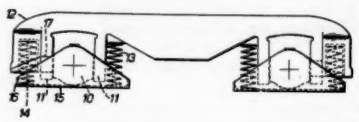
An electrically insulated railway car truck for carrying a car body includes an electric motor adapted to drive the truck by means of power from the third rail. The spacing of the electric motor, wiring arrangement and bolster position with respect to the third rail minimize the likelihood of flash-over or shorting of the electrical power to the truck or car body.

3,835,789

SNUBBED RAILWAY BOGIES

Frederick William Sinclair, Gloucester, England, assignor to Gloucester Railway Carriage Wagon Company Limited, Gloucester, England

Filed July 28, 1971, Ser. No. 166,808
Int. Cl. B61f *5/30, 5/46, 5/50*
U.S. Cl. 105—224 R **9 Claims**



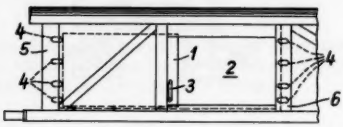
In a suspension for a railway bogie or fourwheeled wagon an axlebox assembly has a face riding against a pedestal guide and supports the frame assembly through a suspension spring. A friction damper in the pedestal guide engages the face in line horizontally with the axle bearing. An upper spring abutment is supported by the frame assembly through to the pedestal by an inclined downwardly facing wedge surface so that the spring force loading the abutment results in a lateral force applied to the damper and rising in the axlebox assembly may comprise an axlebox in an inverted saddle suspended from a beam on or above the axlebox and frictionally engaged by the damper. The saddle provides for relative lateral movement of the axlebox. The spring abutment is provided by a pot-like spring housing with an integral surrounding collar with an upwardly facing wedge surface. The wedge surfaces engage frictionally or are separated by bonded rubber pads in combine shear and compression.

3,835,790

END ABUTMENTS FOR SLIDING DOORS

Wilhelm Schwarz; Henricus Tromp, and Winfried Heinz, all of Wilhelmshaven, Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Apr. 10, 1973, Ser. No. 349,763
Claims priority, application Germany, Apr. 21, 1972, 7215206
Int. Cl. F16f *1/37*
U.S. Cl. 105—285 6 Claims



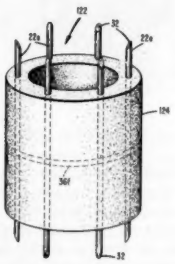
An end abutment for a sliding door, especially of a railway freight car, which abutment includes a cellular body of synthetic material having a cross sectionally greater diameter section for insertion into a door frame fitting and also having a cross sectionally shorter diameter section axially projecting from said cross sectionally greater diameter section.

3,835,791

PRESS-ON PALLET SUPPORT

Dwight C. Brown, 5712 N. 20th St., Arlington, Va. 22205

Filed Sept. 7, 1972, Ser. No. 286,892
Int. Cl. B65d *19/00*
U.S. Cl. 108—51 10 Claims



Metal supports of open frame or slatted construction for self-fastening to a wooden or composition decking of a pallet to provide support for the deck. Each support has a plurality of prongs extending from at least one end of an open frame upright wall to penetrate into the pallet decking during construction of the pallet. The walls of the support member may be tapered so as to facilitate the nesting of a plurality of like supports to reduce storage space requirements and increase ease of handling prior to use in assembly of the pallet.

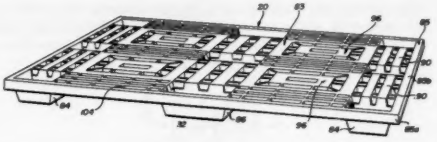
3,835,792

PALLET CONSTRUCTION

Thomas Parker Wharton, 1001 Pembrook Dr., Neenah, Wis. 54956

Continuation-in-part of Ser. No. 131,087, April 5, 1971, Pat. No. 3,702,100. This application Oct. 30, 1972, Ser. No. 302,340
Int. Cl. B65d *19/18*; A47b *19/38*
U.S. Cl. 108—51 3 Claims

The invention relates to lightweight, reusable, molded plastic pallets used for support and transport of articles stacked thereon. The pallet has top and bottom decks, each having a generally corrugated structure, the transverse cross-sectional contour of the corrugations preferably being trapezoidal in shape, and both being provided with a plurality of feet, the feet on the top deck extending from the bottom face thereof and complementary feet extending from the top face



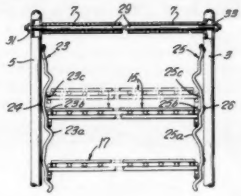
of the bottom deck, the aligned feet of the top and bottom decks being adapted to be fastened together, permanently or disconnectedly, to form a space between the two decks for receiving the tines of a fork-lift loading apparatus, such as a lift truck.

3,835,793

RIGID STRUCTURE FOR SHELVING UNIT

Norman H. Goddard, Chateauguay Center, Quebec, Canada, assignor to JCN Wire Industries Ltd., Quebec, Canada

Filed June 18, 1973, Ser. No. 371,070
Int. Cl. A47b *57/06*
U.S. Cl. 108—109 6 Claims



The invention relates to a novel rigid structure for a knock-down shelving arrangement. The structure includes two side frame members which include shelf-retaining means at the ends of the structure. The retaining means at each end face each other and comprise a plurality of retaining units. Each unit consists of a shelf-supporting protrusion, a resilient shelf-locking portion, and a shelf-clearing portion. The space between a pair of facing clearing portions is greater than the width of the shelf and the space between a pair of locking portions is less than this width. The space between a pair of protrusions is substantially less than the shelf width. Thus, a shelf can be inserted into the structure through the end of the structure in the space between clearing portions. It is then locked into place by forcing it into the locking space, and the supporting portion supports the shelf when it is carrying a load. With this arrangement, shelves can be spaced closely one on top of the other, and it is possible to remove a bottom or middle shelf without removing the shelves above or below the bottom or middle shelf.

3,835,794

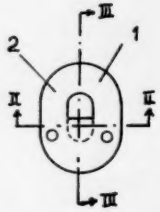
ARRANGEMENT FOR DETACHABLY INTERCONNECTING ELEMENTS

Yngve Adolf Eugen Wassberg, and Sven-Ake Gustaf-Adolf Wassberg, both of Linkoping, Sweden, assignors to Wa-Konsult Wassberg & Wassberg AB, Linkoping, Sweden

Filed Sept. 22, 1972, Ser. No. 291,603
Int. Cl. A47b *3/06*
U.S. Cl. 108—153 2 Claims

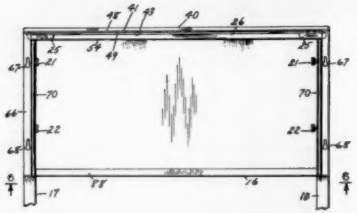
An arrangement suitable for detachably securing shelves in a bookcase or the like wherein a step is provided for support-

ing each shelf on an outward extremity which includes a hook which engages behind a lip formed by an opening in a retainer plate overlapping a recess in each shelf, the engagement being by insertion of the hook in the opening of the retainer plate



and turning through a right angle, finally providing a dowel in a hole in the shelf and step so that when the dowel is fitted across the mutual surfaces between the step and shelf the step and shelf are interlocked.

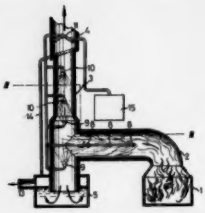
3,835,795
RAPID ASSEMBLY TABLE CONSTRUCTION
Nat Levenberg, 2 Windsor Pl., Lynbrook, N.Y. 11563
Filed Jan. 5, 1973, Ser. No. 321,320
Int. Cl. A47b *3/06*
U.S. Cl. 108—157 **1 Claim**



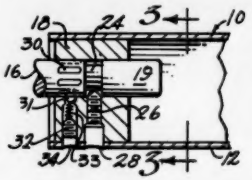
A rapidly assemblable table construction in which the top, side and front elements are conveniently integrated from separated condition in the absence of tools, thereby enabling the table to be stored or shipped with the separated elements in superimposed condition. When in assembled condition, locking means associated with a top panel operates to prevent disengagement of plural interconnecting means, and assures rigidity of the composite structure.

3,835,796
EXHAUST SMOKE PURIFYING APPARATUS FOR INCINERATORS
Yasuhiro Sanga, 19-26, 5-chome, Shakujii-cho, Nerimaku, Tokyo, Japan
Filed Dec. 13, 1973, Ser. No. 424,217
Int. Cl. B01d *47/06*
U.S. Cl. 110—119 **4 Claims**

An exhaust gas cleaner for incinerators comprising a horizontal purifying duct horizontally extending from an incinerating furnace and provided with internal spray nozzles for spraying water in the direction of flow of the exhaust smoke, a vertical duct and provided with internal spray nozzles for upwardly spraying water and also internal spray nozzles for downwardly spraying water, the top portion of the vertical cleaner duct being provided with a baffle purifier, and a drain tank provided below the vertical purifying duct.



3,835,797
PATTERN CONTROL FOR TUFTING MACHINES
Aud J. Franks, Rt. No. 7, Rocky Face, Ga. 30740, and Will A. Johnson, P.O. Box 843, Lafayette, Ga. 30728
Filed Nov. 11, 1971, Ser. No. 197,714
Int. Cl. D05c *15/32*
U.S. Cl. 112—79 A **3 Claims**

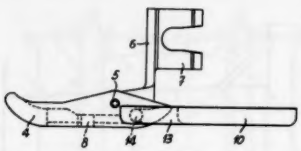


A yarn control roller arrangement for varying the amount of yarn supplied to the tufting needles at different times to vary the pattern tufted. A large metal roller is eccentrically supported on opposite ends on respective short end shafts which are concentrically mounted in journal bearings on the frame of the tufting machine and eccentrically attached to the end of the roller by insertion in a metal plug held by set screws in the hollow steel roller. The end of the short shaft in the roller has a series of peripheral grooves each representing a position. The individual yarns are led side-by-side along the length of the roller on opposite sides thereof and the eccentric rotation of the roller on each revolution bends the yarns outwardly from the axis of the shaft thereby delivering more or less yarn depending upon the position.

3,835,798
ASSEMBLY COMPRISING A PRESSER FOOT AND A GRADUATED RULE
Marcel Fresard, Petit-Lancy, Geneva, Switzerland, assignor to Melfina S.A., Fribourg, Switzerland
Filed Mar. 29, 1973, Ser. No. 345,852
Claims priority, application Switzerland, Apr. 7, 1972, 5112/72
Int. Cl. D05b *29/00, 35/12*
U.S. Cl. 112—150 **8 Claims**

An assembly comprising a presser foot and at least one graduated rule consisting of a plate hingedly secured to the sole portion of the presser foot and extending prolongation of said sole portion and in the same plane, the hinge axis extend-

ing in a direction transverse to said sole portion, the main advantage being that the presser foot is equally suitable for satin



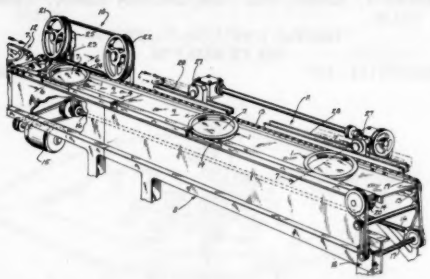
stitch, buttonholing and normal or straight stitch sewing operations without changing the presser foot when passing from satin stitch sewing to straight stitch sewing.

3,835,799

IN-LINE CRIMPING DEVICE FOR RIGID FOIL CONTAINERS

R. Carl Huth, Milwaukee, and William McCoy, Brookfield, both of Wis., assignors to Robert A. Johnston Company, Inc., Milwaukee, Wis.

Filed July 12, 1972, Ser. No. 270,938
Int. Cl. B21d *19/12*
U.S. Cl. 113—1 E **17 Claims**



An in-line crimping device for rigid foil containers, such as pie pans, includes a longitudinal conveyor. Oppositely disposed container drive belts are disposed along the conveyor and are engaged by the peripheral portions of the containers. The belts cooperate so that the containers rotate as they move continuously down the line. During this travel, their upwardly extending crimping flanges are engaged by one or more angularly disposed crimping members which apply radially inward angular pressure progressively to the flanges to bend the latter toward final position. This engagement by the crimping members is continuous throughout at least one complete revolution of the pan to assure full crimping action on the entire pan circumference.

When a crimping member is used on only one side of the pan, means are provided to prevent flip-up of the opposite pan side.

Several stages of crimping may be included in the machine, and the final crimp may be accomplished by a vertically movable eccentrically driven crimping member.

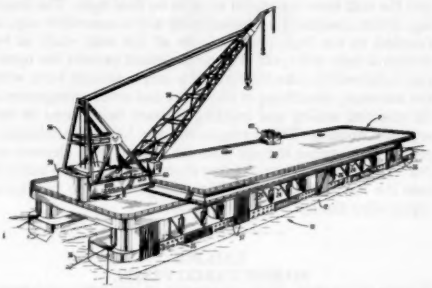
3,835,800

TWIN HULL SEMI-SUBMERSIBLE DERRICK BARGE

Samuel Harry Lloyd, III, Mill Valley, and Yorman Goren, Los Angeles, both of Calif., assignors to Santa Fe Drilling Company, Santa Fe Spring, Calif.

Continuation of Ser. No. 705,175, Feb. 13, 1968, abandoned. This application July 9, 1971, Ser. No. 161,865
Int. Cl. B63b *35/02, 27/10*
U.S. Cl. 114—.5 R **60 Claims**

The derrick barge comprises a pair of laterally spaced elongated hulls having a plurality of upstanding columns spaced therealong supporting a working platform and a heavy duty derrick or crane in spaced relation above the hulls. The hulls bouyantly support the vessel including its deck load in the floating condition with the hulls having freeboard. The hulls have ballast compartments to submerge the hulls and portions of the stabilizing columns to a distance of approximately one-half the effective height of the stabilizing columns to maintain the vessel in a semisubmerged floating condition with the platform and derrick elevated above the waterline. However, the vessel also may be ballasted or deballasted to submerge or



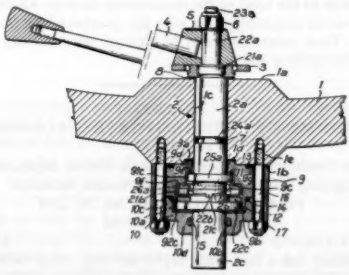
emerge to a greater or lesser extent from the semisubmerged condition such that the distance between the mean water surface and either the underside of the deck or top side of the hull is not less than 0.75 of the mean wave height. The columns stabilize the vessel in the semisubmerged condition about roll and pitch axes. The heavy duty derrick is located adjacent the stern portion of the vessel with its vertical axis of rotation intersecting the vessel centerline. This novel twin hull column stabilized derrick barge arrangement has excellent motion minimizing characteristics under wave action in operations at sea.

3,835,801

DEVICE FOR ROTATING PASSAGE THROUGH A WALL SUBJECT TO DIFFERENT PRESSURES ON EITHER SIDE

Pierre Yvon David, La Valette, and Gilbert Marius Martin, La Seyne, both of France, assignors to Republic of France as represented by the State Minister charged with National Defence Delegation Ministerielle pour l'Armement, Bureau des Prevets et Inventions, Paris, France

Filed Sept. 20, 1973, Ser. No. 399,155
Claims priority, application France, Sept. 25, 1972, 72.33817
Int. Cl. B63g *8/00;* **F16j** *15/50*
U.S. Cl. 114—16 R **8 Claims**



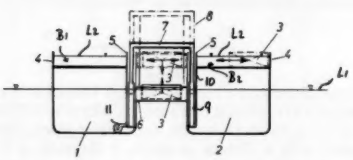
For effecting control from one side of a wall of a member on the other side thereof, such as through the pressure hull of a

submarine, an arrangement is provided wherein a rotary shaft passes through a bore in the wall and a separate housing mounted on the high pressure side about the axis of the bore, such that driver and driven members can be coupled to the ends of the shaft. The housing is formed with a cavity, and the shaft comprises first and second shaft elements axially separable but rotatably coupled with each other. The second shaft element extends from the housing cavity away from the wall and has a shoulder in the housing cavity facing toward the wall, and bearing rotatably against a thrust bearing disposed in the housing between the wall and the shoulder. The housing and the wall bore are sealed so as to be fluid tight. The housing, which comprises a housing body and a removable cap, is coupled to the high pressure side of the wall, such as by threaded rods, bolts, etc. The arrangement permits the opening in the wall to take the form of a simple smooth bore, with the necessary machining of shoulders and other arrangements for ensuring sealing and resisting pressure being done on the separate housing. The arrangement also limits the transmission of nonrotative stresses from the second shaft element on the high pressure side to the first shaft element, which extends into the low pressure area. The arrangement also facilitates repair after damage.

3,835,802
MARINE CARGO VESSEL

Louis Antoine Vernede; Leopold Nitzki, both of Bremen; Heinrich Liedke, Bremen-Osterholz, and Friedrich Schror, Bremen, all of Germany, assignors to Aktien-Gesellschaft "Weser", Bremen, Germany

Filed Apr. 30, 1971, Ser. No. 138,951
Claims priority, application Germany, May 2, 1970, 2021653
Int. Cl. B63b *35/00, 1/12*
U.S. Cl. 114—43.5 **13 Claims**



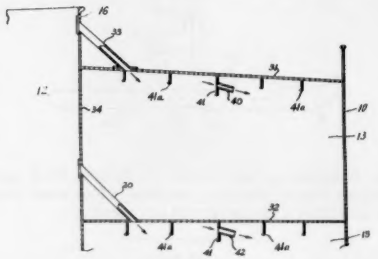
A marine cargo vessel has two parallel hulls which are connected by a bridging structure. At least some of the interior decks in the hulls can be flooded and sluice gates in the hulls connect the interior decks with the exterior of the hulls at a level above the water line. An outwardly open receptacle capable of containing water and containing at least one floatable container at a time, can be moved vertically from the water line to the level of the sluice gates through which it can be placed in communication with the interior of the floodable decks. Thus, containers can be floated into and out of the decks for loading and unloading.

3,835,803
TRIMMING PIPE SYSTEM FOR FREE-FLOWING CARGOES

George Thomas Richardson Campbell, Tokyo, Japan, assignor to Algoship International Limited, Nassau, Bahamas

Filed Apr. 25, 1972, Ser. No. 247,341
Int. Cl. B63b *25/02*
U.S. Cl. 114—73 **3 Claims**

A vessel has a hull with decks defining cargo holds, and loading hatches for the holds extend through the decks. Open-ended trimming pipes slant downwardly and outwardly from walls of the hatches to communicate with the holds at points spaced outwardly from the hatches. The decks are supported at their underside by substantially horizontal girders, and additional open-ended trimming pipes extend through the girders so that free-flowing cargo deposited through the hatches into

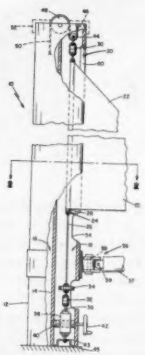


the holds also flows through the two sets of trimming pipes for trimming of the cargo in regions of the holds remote from the hatches.

3,835,804
SAIL FURLING

Patrick T. Jackson, Oak Point, Boothbay Harbor, Maine 04538

Filed Feb. 1, 1973, Ser. No. 328,779
Int. Cl. B63h *9/04*
U.S. Cl. 114—107 **6 Claims**



In a sailboat having a mast, a boom, and a sail furlable upon an upright wind-up member such as a rotatable cable to which the luff of the sail is affixed, the improvement wherein the mast comprises a rigid shell providing a vertically disposed interior chamber having an extended vertical opening therein facing aft the wind-up member being disposed within the chamber and the edges of the opening furnishing lengthwise support to the luff of the sail at all boom positions.

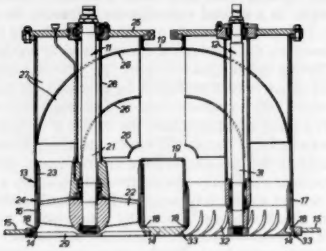
3,835,805
THRUSTER UNIT

Owen George Slade, Isle of Wight, England, assignor to J. Samuel White & Company Limited, Hampshire, England

Filed June 4, 1973, Ser. No. 366,777
Claims priority, application Great Britain, June 5, 1972, 26080/72
Int. Cl. B63h *25/46*
U.S. Cl. 114—151 **6 Claims**

This invention is a bow thruster for a ship and consists of a design enabling the movable components to be easily withdrawn for repair or replacement. A rotary pump and a ro-

tary deflector each consisting of a rotor and a stator are each a slide fit in a corresponding vertical passage in a unitary housing which is a permanent fixture in the ship's hull, together



with a cross passage joining the vertical passages at the top. Either the pump, or the deflector, or both, can be slid out of its vertical passage for maintenance and that can be done from above without having to go into dry dock.

3,835,806

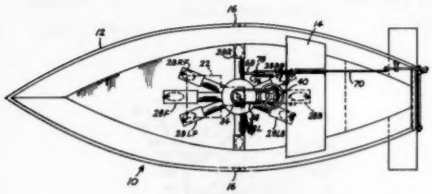
POWER PROPULSION MEANS FOR BOATS

Robert D. Rice, 380 Murphy Creek Rd., Grants Pass, Oreg. 97526

Filed Apr. 26, 1973, Ser. No. 354,679

Int. Cl. B63h *11/08*

U.S. Cl. 115—12 R **9 Claims**



A small boat, preferably of a type known as a drift boat, is equipped, in the vicinity of the center of mass of the boat and its fixed contents, with a motor-driven pump having a casing and an impeller which drives water upward in the casing. The casing is formed to admit water to the bottom of the pump chamber and discharge it from the top of the pump chamber. The intake and discharge passages terminate at a common level, however, for selective communication with stationary intake and discharge conduits which radiate from the pump perimeter and terminate at their outer ends below water level. The pump casing is rotatable for selectively placing different diametrically opposite fixed conduits selectively in communication with the intake and discharge passages of the pump, respectively. According to the orientation of the pump casing, any fixed conduit may be caused to serve as an intake conduit with a diametricallly opposite fixed conduit serving as a discharge conduit.

3,835,807

SHALLOW WATER DRIVE LINK CONTROL

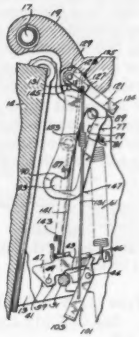
Don F. Kueny, 2716 Brnot Ave., Waukegan, Ill. 60085

Filed Aug. 6, 1973, Ser. No. 386,082

Int. Cl. B63h *21/26*

U.S. Cl. 115—41 R **10 Claims**

Disclosed herein is a marine propulsion device including a reverse lock movably mounted on a swivel bracket for releasable engagement with a thrust pin to retain the swivel bracket in normal operating position, a shallow water drive link mounted on the swivel bracket for movement relative to a position for releasable engagement with the thrust pin to retain the swivel swivel bracket in the shallow water drive position, and a selectively operable control mechanism mounted on the swivel bracket and including an element



operably connected to the reverse lock, and to the shallow water drive link for controlling releasable engagement of the thrust pin by the reverse lock and for displacing the shallow water drive link relative to a position affording releasable engagement with the thrust pin.

3,835,808

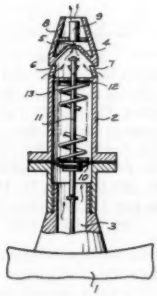
LOW PRESSURE WARNING SYSTEM FOR A TIRE

Peter Stevens, Mississauga, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Dec. 18, 1973, Ser. No. 426,100

Int. Cl. B60c *23/02*

U.S. Cl. 116—34 R **1 Claim**



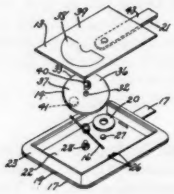
A low pressure warning system for a wheel mounted tire comprises a housing on the tire having a first opening at one end thereof into the tire. A closing member extends across the housing at the opposite end thereof. A second opening is provided in the closing member. A plurality of openings are formed through the housing adjacent the closing member admitting air into the housing. The housing has a free end extending beyond the closing member. An air-operated whistle is mounted in the housing in the free end thereof. A diaphragm is mounted in the housing and extends thereacross. A pin is supported by the diaphragm and movable therewith. The pin extends substantially coaxially through the housing to the area of the second opening thereof. A spring retainer is

mounted in the housing and extends thereacross. A spring having a predetermined force is coaxially positioned around the pin and extends between the spring retainer and the diaphragm. When the pressure of air in the tire is at least the proper pressure, the force of air on the diaphragm equals the force of the spring on the diaphragm and the diaphragm retains the end of the pin in the second hole thereby preventing air from flowing from the opening in the housing through the second opening and through the whistle. When the pressure of air in the tire is less than the proper pressure, the force of the spring is greater than the force of air on the diaphragm and the diaphragm moves the pin out of the second opening thereby permitting air due to the rotary motion of the wheel mounted tire to flow from the openings in the housing through the second opening and through the whistle to sound an audible alarm.

3,835,809
DAMAGE INDICATOR

Harry Sinn, Jr., 116-05 227th St., Cambria Heights, N.Y. 11411

Filed June 21, 1973, Ser. No. 372,096
Int. Cl. G01p *15/02*
U.S. Cl. 116—114 AH **7 Claims**

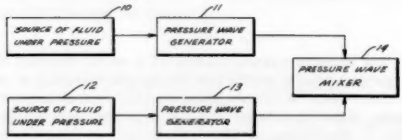


A damage indicating device which has a safety tab keeping it in a "loaded" condition until it is attached to a container. The device has means urging an indicator to show that the container has been subjected to stress in excess of a predetermined amount, and inertia activated means which releases the indicator.

3,835,810
PRESSURE WAVE MIXING

Nathaniel Hughes, Corona Del Mar, Calif., assignor to Energy Sciences Incorporated, El Segundo, Calif.

Continuation-in-part of Ser. Nos. 855,321, Sept. 4, 1969, abandoned, and Ser. No. 85,911, Nov. 2, 1970, abandoned, and Ser. No. 111,995, Feb. 2, 1971, and Ser. No. 158,915, July 1, 1971, and Ser. No. 189,206, Oct. 14, 1971, abandoned. This application Jan. 12, 1972, Ser. No. 217,124
Int. Cl. B06b *3/00*
U.S. Cl. 116—137 A **40 Claims**

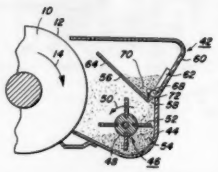


The propagating range and/or energizing capability of pressure waves are enhanced by mixing pressure waves from a plurality of sources. The wavelengths of the pressure waves and the physical dimensions of the mixing arrangement are related to each other. In a first embodiment, coherent sonic waves are coupled to the inlets of a plurality of passages having cross-sectional dimensions related to the wavelength of the sonic waves, and the sonic waves emanating from the outlets of the passages are combined. The outlets of adjacent passages are preferably spaced from each other a distance related to the wavelength. In a second embodiment, coherent shock waves produced by two supersonic nozzles are combined at a point of intersection; the nozzles are dimensioned to produce shock waves having related wavelengths. In a third embodiment, coherent shock waves produced by a supersonic nozzle and the pressure pulses characteristic of a simple orifice are combined at a point of intersection; the orifice is dimensioned so the wavelengths of the shock waves and the pressure pulses are related. In the second and third embodiments, the point of intersection is preferably spaced from the sources a distance that is related to the wavelengths. In a fourth embodiment, coherent shock waves produced by a supersonic nozzle and pressure waves characteristic of a simple orifice are combined in a resonant cavity having rectangular cross-sectional dimensions that are related to the wavelengths.

3,835,811
DEVELOPMENT APPARATUS FOR ELECTROPHOTOGRAPHIC PRINTING MACHINE

Yoshio Eto, Omiya, Japan, assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 18, 1972, Ser. No. 290,195
Int. Cl. G03g *13/08*
U.S. Cl. 118—637 **4 Claims**



An apparatus in which toner particles are deposited on an image bearing member having an electrostatic latent image recorded thereon for producing a viewable powder image thereof. Carrier granules flow from a storage region to a discharge region and are intermingled thereat with toner particles. The resulting mix of carrier granules and toner particles is directed to cascade over the image bearing member creating a toner powder image on the electrostatic latent image recorded thereon.

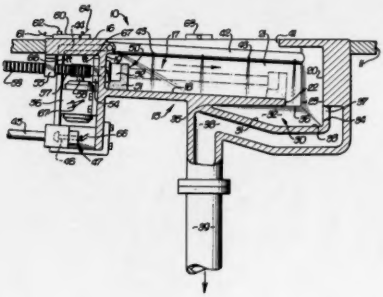
3,835,812
ANIMAL TOILET

Cyril H. Edwards, 25336 Coulston St., Loma Linda, Calif. 92354

Filed Jan. 16, 1973, Ser. No. 324,226
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 **12 Claims**

An animal toilet suitable for installation indoors or outdoors by connection to a conventional plumbing system includes a toilet bowl having a substantially flat bottom in which a dog

may stand while relieving itself and is arranged to clean animal excrement from the toilet bowl by simultaneously flushing and

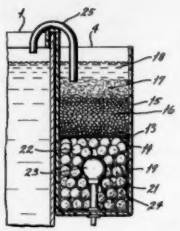


wiping the bowl to move the excrement into a discharge outlet. The toilet may be arranged for automatic actuation.

3,835,813
FILTRATION AND CIRCULATION SYSTEM AND APPARATUS THEREFORE

Louis N. Katz, 13415 Land O'Woods Dr., St. Louis, Mo. 63141

Filed July 18, 1973, Ser. No. 380,228
Int. Cl. A01k *63/00*
U.S. Cl. 119—5 **3 Claims**



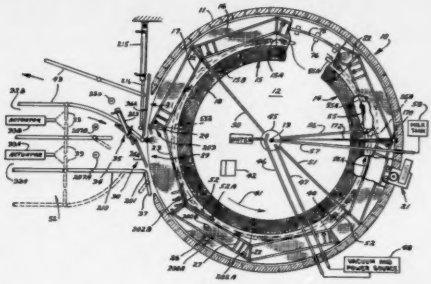
A balanced system for purifying aquatic media and maintaining aquatic specimens which comprises biological filtration, mechanical filtration and algae propagation.

3,835,814
ROTATING MILKING PLATFORM

Leonard D. Jacobs, North Loup, Nebr., and Robert H. Bennett, St. Charles, Ill., assignors to Circle Milking, Inc., Jamestown, N. Dak.

Filed July 14, 1972, Ser. No. 271,787
Int. Cl. A01j *05/00*
U.S. Cl. 119—14.04 **20 Claims**

The present invention relates to a rotating milking platform for use in a milking parlor wherein the cows move onto a rotating platform, and the cows ride around on the platform while they are milked. A unique drive and support construction for the common friction individual stall portions of the platform which carries the cows is disclosed. The drive compensates for irregularities in the platform. In addition controls for regulating the entry and exit of the cows to and from the

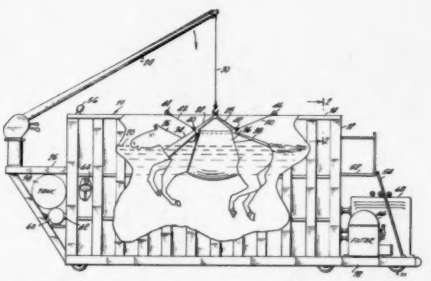


platform are provided. Also, means are provided on the platform to cleanse the interior side walls of the parlor as the platform rotates.

3,835,815
THERAPEUTIC CONDITIONER FOR HORSES

Richard Matthews, Bayshore, N.Y., assignor to John Di Maio, Bayshore, N.Y.

Filed May 23, 1973, Ser. No. 362,941
Int. Cl. A61d *11/00*
U.S. Cl. 119—158 **4 Claims**



A therapeutic conditioner for horses comprising a water fillable open tank and having a hoist and a sling assembly for the purpose of lifting and holding a horse in the tank while the horse swims. Guide ropes extend from the sling assembly to the periphery of the tank and serve to maintain the position of the horse relative to the tank. A tank and a pump are provided for storing and introducing cleaning and medicating solutions into the water in the tank.

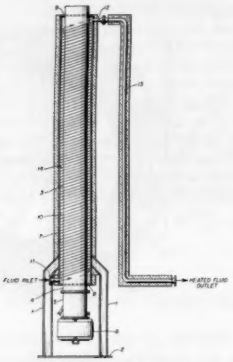
3,835,816
HEATER

Charles R. Ferrin, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.

Filed May 2, 1973, Ser. No. 356,692
Int. Cl. F22b *7/00*
U.S. Cl. 122—156 **2 Claims**

An elongated tube has a burner discharging products of combustion through its length. A layer of fluid to be heated is

flowed over the outside of the firetube. Diverting structure is placed on the outside wall of the firetube to keep the flow rate

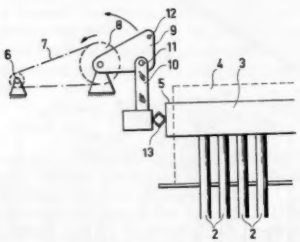


of the fluid above a predetermined minimum and extend the surface of the firetube for heat dissipation into the fluids as a control of the film temperature of the fluid.

3,835,817
APPARATUS FOR OUTSIDE CLEANING OF BOILER TUBES

Jorma Aarne Kullervo Tuomaala, Karhula, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Aug. 21, 1972, Ser. No. 282,053
Claims priority, application Finland, Aug. 19, 1971, 2316/71
Int. Cl. F28g *7/00*
U.S. Cl. 122—379 **5 Claims**



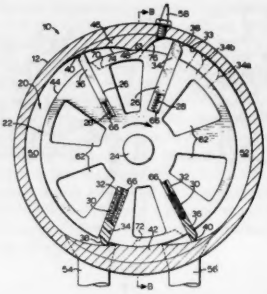
There is provided a device for outside cleaning of boiler tubes and similar, wherein the tubes are imparted to mechanical impulses or vibration within the frequency range of 200 – 2,000 Hz, suitable at about 1,000 Hz. The mechanical impulse is directed at the tubes or a part thereof immediately connected to the tubes. Such mechanical vibration may be created with the help of a striking hammer provided with a suitable spring system to give the desired frequency or with the help of, e.g., a periodically working thyristor-guided magnetic vibrator.

3,835,818
METHOD OF OPERATING A ROTARY PISTON INTERNAL COMBUSTION ENGINE

Herbert C. Catherwood, 329 Upper Sherman Ave., No. 2, Hamilton 53, Ontario, Canada

Division of Ser. No. 263,463, June 16, 1972, Pat. No. 3,791,353. This application Sept. 10, 1973, Ser. No. 396,075
Int. Cl. F02b *53/02*
U.S. Cl. 123—8.33 **2 Claims**

A rotary internal combustion engine is operated to achieve smooth and efficient power output. A compressed air-fuel mixture which has been subjected to turbulence is transferred from one zone to an ignition zone wherein it is ignited. The ignited mixture increases in volume in regular manner to impart

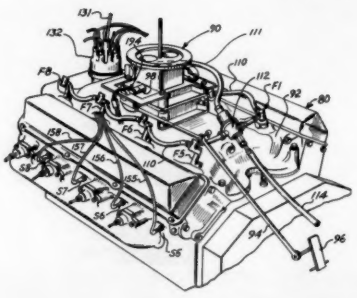


rotation of the rotor after the ignition. The expansion of the ignited mixture causes exhaustion of the mixture ignited on the previous cycle.

3,835,819
DIGITAL ENGINE CONTROL APPARATUS AND METHOD

Robert L. Anderson, Jr., Pittsburgh, Pa., assignor to Essex International, Inc., Fort Wayne, Ind.

Filed Dec. 29, 1972, Ser. No. 319,345
Int. Cl. F02m *52/00*
U.S. Cl. 123—32 EA **51 Claims**



The disclosure describes digital apparatus and a digital method for operating a multicylinder internal combustion engine having spark plugs that are fired in response to an electrical fire signal and having fuel injectors that are opened to admit a quantity of fuel in response to an electrical fuel signal having a duration determined by the speed of the engine and the position of a throttle controlled by an operator of the engine.

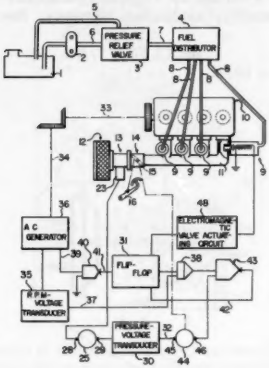
3,835,820
FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Hideya Fujisawa, Kariya, Japan, assignor to Nipponsenso Co. Ltd., Aichi-ken, Japan

Filed June 16, 1972, Ser. No. 263,618
Claims priority, application Japan, June 17, 1971, 46-43607
Int. Cl. F02m *51/02*; **F02d** *5/02*
U.S. Cl. 123—32 **6 Claims**

This fuel injection system for internal combustion engines includes first means for generating a DC voltage proportional to the weight flow rate of air taken into an engine, second

means for generating a sawtooth voltage which is synchronized with the working cycle of the engine and whose slope varies with the rotational speed of the engine, third means for comparing the output voltages of said first and



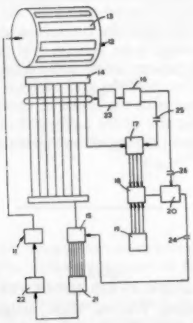
second means and generating a pulse corresponding to the amount of fuel required for each engine cylinder per operating cycle of the engine, and at least one electromagnetic valve operable in response to a pulse generated by said third means.

3,835,821

PETROL INJECTION SYSTEMS FOR INTERNAL COMBUSTION ENGINES

William Frank Hill, Stafford, and Roger Edward Cattermole, Leicester, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Continuation-in-part of Ser. No. 69,614, Sept. 4, 1970, abandoned. This application July 27, 1972, Ser. No. 275,825
Int. Cl. F02b *3/00*
U.S. Cl. 123—32 EA **4 Claims**



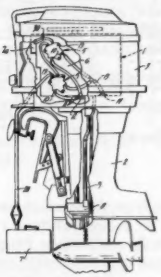
A petrol injection system for an internal combustion engine has a memory device on which are stored a plurality of sets of information, each set containing a number of coded signals and each of the coded signals representing a different fuel requirement. The delivery of fuel is controlled by a control device in which is stored a control signal which is changed from time to time, but is always obtained from the memory device. One significant signal fed to the engine is used to determine from which sets the signal fed to the control device is obtained, and another significant parameter of the engine is used to determine which coded signal from the chosen set is fed from the memory device to the control device.

3,835,822

COOLED FUEL PUMP FOR INTERNAL COMBUSTION ENGINES

John L. Mickle, and Norman E. Horn, both of Oshkosh, Wis., assignors to Brunswick Corporation, Chicago, Ill.

Filed Aug. 16, 1972, Ser. No. 281,037
Int. Cl. F01p *1/00*
U.S. Cl. 123—41.31 **9 Claims**



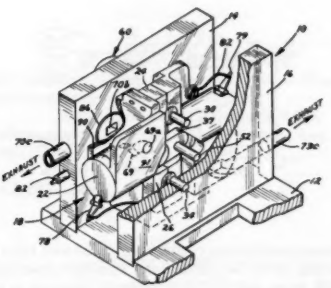
A fuel pump for water-cooled marine engines includes a cast aluminum housing. A water cooling tube is embedded in the housing connected directly to the inlet of the main cooling system for the engine such that upon initial starting of the engine, cooling water is immediately supplied to the fuel pump to reduce its temperature, and thereby eliminate vapor lock conditions. The tube may be formed of suitable material to minimize electrolytic conditions with respect to the cast housing and prevent possible leakage of water into the fuel system.

3,835,823

ORBITAL SEALED CHAMBER ENGINE

Robert C. Miller, Rt. 1, Box 258, Frederic, Wis. 54837

Continuation-in-part of Ser. No. 243,987, April 14, 1972, abandoned. This application May 7, 1973, Ser. No. 357,797
Int. Cl. F02b *59/00*
U.S. Cl. 123—42 **5 Claims**

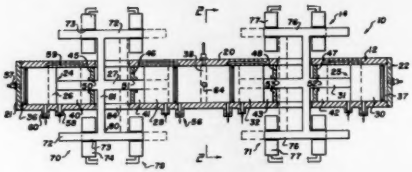


An orbital sealed chamber engine comprising a two stroke single cycle engine in which the engine block and the two headed piston therein are respectively mounted and arranged to move in orbital paths in direction oppositely one another including a pressurized exhaust system utilizing functionally coordinated ports of the cylinder, the engine block and the engine block supporting frame.

3,835,824
FREE PISTON ENGINE

Ronald A. MacDonald, 24-448 Seymour St., Vancouver, British Columbia, Canada

Filed Jan. 22, 1973, Ser. No. 325,838
Int. Cl. F02b 71/00
U.S. Cl. 123—46 R 2 Claims

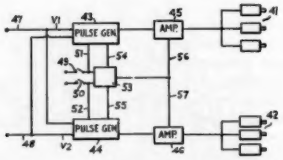


A free piston engine is provided which has a pair of opposed piston units mounted for reciprocation in a cylindrical sleeve. The engine has a large combustion chamber between the piston units and a small combustion chamber at each end of the sleeve. The arrangement provides for compression within the large chamber as a result of the simultaneous firing of explosive charges within the small chambers and, conversly, compression within the small chambers as a result of the firing of an explosive charge within the large cylinder.

3,835,825
INTERNAL COMBUSTION ENGINES

Albert Edward Baxendale, and Edward John Young, both of Coventry, England, assignors to Brico Engineering Limited, Coventry, Warwickshire, England

Division of Ser. No. 89,279, Nov. 13, 1970, Pat. No. 3,702,603.
This application May 26, 1972, Ser. No. 257,243
Claims priority, application Great Britain, Nov. 21, 1969, 57186/69
Int. Cl. F02d 33/00, 11/10; F02b 49/00
U.S. Cl. 123—97 B 3 Claims



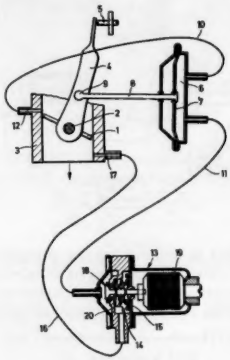
An internal combustion engine is provided with valve means for admitting air to the engine inlet manifold downstream of the throttle valve, and the valve means is operative to pass air to the inlet manifold under engine over-run conditions when the throttle valve is closed, the supply of fuel is cut-off and the engine speed is substantially above idling speed.

There is also described a fuel injection system having a plurality of fuel injection valves arranged to supply fuel to an engine and including means which are operative, after the supply of fuel has been cut-off during engine over-run conditions, to deliver fuel to the engine via a plurality of the fuel injection valves simultaneously.

3,835,826
INTERNAL COMBUSTION ENGINE

Rudolf Beckmann, and Dietrich Seelmann-Eggebert, both of Wolfsburg, Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Oct. 23, 1970, Ser. No. 83,521
Claims priority, application Germany, Nov. 3, 1969, 1955031
Int. Cl. F02d 11/08
U.S. Cl. 123—103 E 8 Claims



In an internal combustion engine having an air inlet pipe and a throttle valve rotatably mounted in the pipe on a shaft, a damper device having a housing and a yieldable wall therein which together with the housing defines a pressure chamber, a passage leading from the pressure chamber to a calibrated opening in the air inlet pipe, the opening being arranged adjacent the throttle valve such that the latter sweeps over the opening during acceleration of the engine, a drag lever operatively connected with the throttle valve, the yieldable wall and the lever being mechanically connected whereby the wall is adapted to move the lever into an end position during acceleration and during operation under load of the engine, and to release the lever from the end position at a slowed-down rate in accordance with the speed of change in air pressure determined by the size of the calibrated opening, to thereby cause a slowed-down closing of the throttle valve.

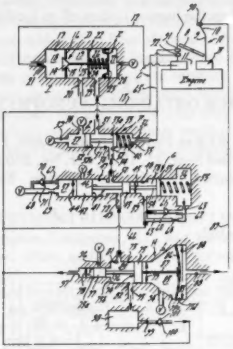
3,835,827
EXHAUST AND GAS RECIRCULATING SYSTEM

James H. Wolgemuth, Warren, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 29, 1973, Ser. No. 327,280
Int. Cl. F02m 25/06
U.S. Cl. 123—119 A 7 Claims

An exhaust gas recirculation system is disclosed employing a primary control valve having a vacuum operated servo mechanism for controlling the admission of recirculating gases. The servo mechanism is operated in response to a modulated vacuum signal derived principally from intake manifold vacuum. Modulation of the vacuum signal is achieved by three control means connected in series, one of which functions in response to a differential between carbureted venturi vacuum and the intake manifold vacuum, another control means operates to prevent communication of

the vacuum signal to the servo mechanism during prolonged steady or nearly steady conditions of the engine, yet another



control means is effective to prevent communication of the vacuum signal during wide-open throttle conditions of the engine carburetor.

3,835,828

FUEL SUPPLY SYSTEM

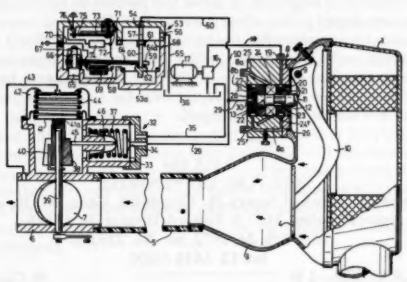
Heinrich Knapp, Leonberg-Silberberg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 9, 1973, Ser. No. 386,980

Claims priority, application Germany, Sept. 7, 1972, 2243921

Int. Cl. F02m *69/00*

U.S. Cl. 123—119 R **4 Claims**



In a fuel supply system for an externally ignited internal combustion engine with compression of the fuel/air mixture, in which air flow-measuring means and a randomly operable throttle valve are arranged successively in the air intake suction pipe of the engine, and the meauring means is moved, in proportion to the air amount flowing through the suction pipe, against an at least substantially constant resetting force and thereby displaces the movable member of a distributing valve arranged in the fuel line in order to meter a fuel amount proportional to the air amount, and wherein a pressure liquid of at least substantially constant pressure, which is continuously delivered through a pressure line, serves to transmit the resetting force and acts upon a control slide valve to effect the resetting, the pressure of the liquid being variable by means of at least one regulated pressure control valve which is controlled in dependence on characteristic engine data, there is described an improved control cell adapted for temperature-dependent operation and which comprises a cell housing, bimetallic spring means, and heat-conducting tongue means jointly mounted in the housing for the conduction of heat from the tongue means to the bimetallic spring means and insulated against heat losses to the housing, electrical heating means associated with the tongue means, and fuel pressure regulating means comprising a control spring mounted in the housing, the bimetallic spring means being adapted for engaging the control spring and reducing the force of the spring at temperatures below the operational temperature of the engine.

3,835,829

FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES

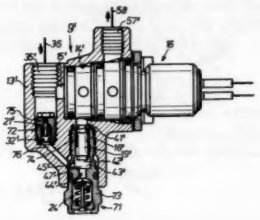
Heinz Links, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed May 23, 1972, Ser. No. 256,126

Claims priority, application Germany, May 28, 1971, 2126653

Int. Cl. F02m *39/00*; **F02b** *3/00*

U.S. Cl. 123—139 E **6 Claims**



There is described a pump-and-nozzle assembly which forms part of a fuel injection apparatus serving an internal combustion engine and which includes a reciprocating pump piston performing its injection strokes by virtue of hydraulic pressure intermittently applied thereto in a controlled manner. Between two injection strokes the pump work chamber is charged with pressurized fuel through a supply valve and a throttle which causes the charging period to be substantially longer than the injection period. The supply valve is biased closed by a spring pressure which, together with the maximum charging pressure prevailing in the pump work chamber, is at most equal to the fuel supply pressure which, in turn, is greater than the opening pressure of the fuel injection valve disposed downstream of and in communication with the pump work chamber.

3,835,830

SPARK IGNITION SYSTEMS

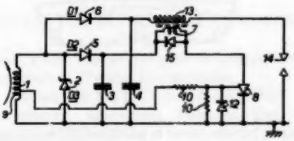
Robert Shepherd, Ilford, England, assignor to Plessey Handel und Investments A.G., Zug, Switzerland

Filed Aug. 14, 1972, Ser. No. 280,286

Claims priority, application Great Britain, Aug. 17, 1971, 38638/71

Int. Cl. F02p *3/06*

U.S. Cl. 123—148 E **1 Claim**



A spark generator or ignition system in which an arc is struck by applying an E.H.T. voltage pulse, of some thousands

of volts, across a spark gap, and maintaining the spark by the current from the discharge of a capacitor charged only to an H.T. voltage (typically 400v), which produces spark intensifying energy.

3,835,831

AUTOMATIC COLD STARTING DEVICES FOR INTERNAL COMBUSTION ENGINES

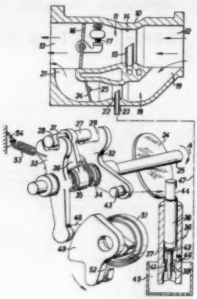
Gray Ernest Donald Ross, Wiggington, England, assignor to The Zenith Carburetter Company Limited, Middlesex, England

Filed Apr. 12, 1972, Ser. No. 243,312

Claims priority, application Great Britain, Apr. 15, 1971, 9459/71

Int. Cl. F02m *1/04, 1/10*

U.S. Cl. 123—179 G **9 Claims**



An automatic cold starting device for an internal combustion engine comprises, in an auxiliary passage leading into the main induction passage through which fuel/air mixture is normally supplied to the engine downstream of the main throttle valve, a second throttle valve and a fuel supply source controlled by a fuel valve, the second throttle valve and fuel valve being fully open when the engine is cold, being initially partly closed by suction in the auxiliary passage when the engine starts, and being then controlled for progressive further closing by a temperature sensitive device responsive to engine temperature.

3,835,832

SELF-CLEANING BURNER COVER, ESPECIALLY FOR HOUSEHOLD APPLIANCES

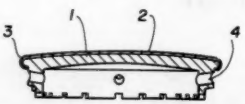
Friedrich Welcker, (585) Hohenlimburg, Im Sonnenwinkel 28, Germany

Filed May 21, 1973, Ser. No. 362,537

Claims priority, application Germany, May 26, 1972, 2225530

Int. Cl. F24c *15/14*

U.S. Cl. 126—215 **8 Claims**



The present burner cover is provided on its top surface with a sheet metal cover layer which is either flanged or crimped around the edge of the cover or the cover has a recess in its top to receive the sheet metal layer, whereby the edge of the cover is preferably upset inwardly to hold the layer in position. The layer is made of a material having an expansion coefficient and heat conductivity larger than the cover itself, whereby an air space is formed between the cover layer during heating due to the bulging of the cover layer which will contract again when the burner is shut off to facilitate the removal of food spills.

3,835,833

METHOD FOR OBTAINING NEUROPHYSIOLOGICAL EFFECTS

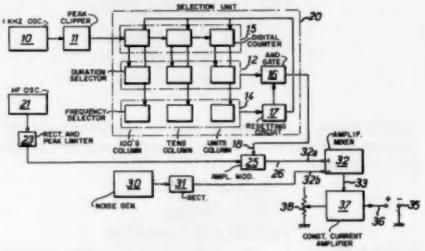
Aime Limoge, 83 Rue Pierre Demours, Paris, France (75017)

Filed Sept. 21, 1972, Ser. No. 290,804

Claims priority, application France, Sept. 24, 1971, 71.34365

Int. Cl. A61n *1/36*

U.S. Cl. 128—1 C **5 Claims**



A method and apparatus for obtaining neurophysiological effects on the central and/or peripheral systems of a patient. Electrodes are suitably positioned on the body of the patient and a composite electric signal is applied at the electrodes. The composite signal is formed by the superpositioning of two signals: a first signal which is a rectified high-frequency carrier modulated in amplitude to about 100 percent by substantially square-shaped pulses whose duration, amplitude and frequency are chosen according to the neurophysiological effects desidered, and a second signal which has a relatively white noise spectrum. The mean value of the first electric signal has a predetermined sign which is opposite the sign of the mean value of the second electric signal.

3,835,834

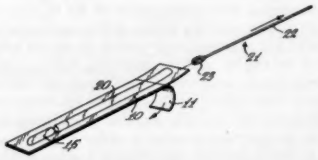
CULTURE TRANSPORTER

James B. Brown, 1 Seneca Pl., Greenwich, Conn. 06830, and James D. Bailey, 2107 N. Edward, Decatur, Ill. 62526

Filed Feb. 24, 1972, Ser. No. 229,007

Int. Cl. A61b *10/00*

U.S. Cl. 128—2 W **10 Claims**



A culture transporter having a pair of recesses formed in a body member to receive respectively, a culture medium and a culture swab with a closing strip secured to the body member to seal off the recesses one from the other for a completely sterile package with provision for removal and use of the culture swab in collecting a culture and return of the culture swab to the culture transporter with resealing thereof. A fracturable

seal between said recesses permits flow of the culture medium to the tip of the swab to maintain the swab moist and the culture in a live condition until laboratory tests are performed on the culture. The body member and closing strip both have a generally planar configuration with the closing strip having an exposed flat face which may bear desired indicia. A tubular member of absorbent material is located at an end of the culture swab recess adjacent the culture medium recess to surround the culture swab tip whereby upon fracture of the seal between said recesses, the culture medium may flow to the tubular member which retains the culture medium and assists in retaining the culture swab tip in a moist condition.

3,835,835

TWO COMPARTMENT LOCKING SAMPLING SYRINGE

Ronald J. Thompson, Lexington, Ky., and Robert D. MacKenzie, Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

Filed Nov. 7, 1972, Ser. No. 304,563
Int. Cl. A61b *5/14; A61m 5/22*
U.S. Cl. 128—2 F **3 Claims**

A multi-barrel syringe for drawing blood from a vein which is characterized by having a plunger member, an intermediate plunger-barrel member, an outer barrel member and releasable locking mechanism to fix the intermediate plunger-barrel to the outer barrel and to release the two members from their fixed relationship on predetermined movement of the plunger member while at the same time fixing the said intermediate plunger-barrel to said plunger whereby the intermediate member acts as a plunger and causes formation of a chamber for receiving blood between said outer barrel and said intermediate plunger-barrel member as the plunger member is withdrawn.

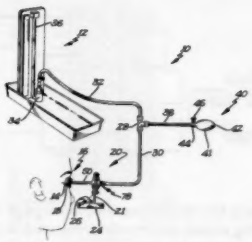
3,835,836

COMPRESSION OPTHALMODYNAMOMETER

Yale C. Kanter, 1756 Rome Ave., St. Paul, Minn. 55116, and Bruce A. Nemer, 8901 W. 34th St., Minneapolis, Minn. 55426

Continuation of Ser. No. 147,430, May 27, 1971, abandoned. This application June 21, 1973, Ser. No. 372,198
Int. Cl. A61b *5/02*
U.S. Cl. 128—2 T **9 Claims**

A compression ophthalmodynamometer for measuring blood pressure in the human eye in conjunction with a mercury manometer is disclosed. The instrument includes a hand-held rubber compressor bulb having one-way valves for providing air under pressure, an air-pressure-to-proportional-contact-force transducer, and tubes which simultaneously conduct the air under pressure to both the manometer and the transducer. The manometer gives an indication of the pressure of the air while, simultaneously, the transducer applies a force proportional to the pressure of the air to the surface of the eye through a foot-plate contact with the surface of the eye. One embodiment of the transducer includes a hollow body separated into halves by a diaphragm. An air pressure chamber is defined within the hollow body between one surface of the diaphragm and the portion of the transducer housing which is adjacent the input to the transducer from the bulb. A rod extends between the second surface of the diaphragm and the foot-plate in contact with the eye to convey air pressure created forces from the diaphragm to the foot-plate and thus to the surface of the eye.

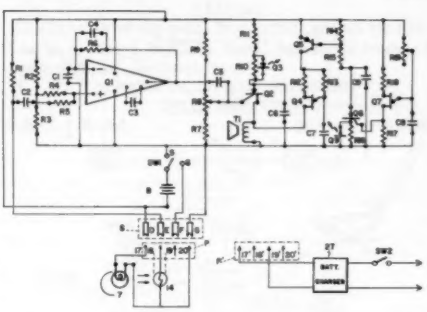


3,835,837

HUMAN PULSE RATE MEASURING APPARATUS

Sandford C. Peek, 111 Summer St., Hingham, Mass. 02043

Filed Sept. 13, 1972, Ser. No. 288,713
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 P **4 Claims**



The specification describes a portable human pulse rate indicator and measuring apparatus which provides an indication of human pulse rate and a timing indication so that both absolute pulse rate and pulse rate changes may be detected. Noise immunity is provided by the use of an LDR detector having poor high frequency response and through the use of low pass filters. The sensor employed utilizes light passing through an extremity of the human hand to the LDR detector providing both accurate generation of the pulse signal and virtual elimination of the generation of artifacts.

3,835,838

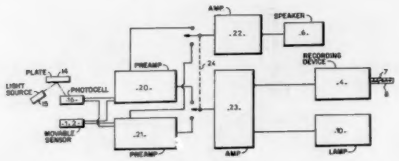
APPARATUS FOR DETECTING CARDIOVASCULAR DISEASES

Jean Rameil, Paris, France, assignor to International Contacts Inventors Anstalt, Vaduz, Liechtenstein

Filed Oct. 12, 1972, Ser. No. 296,866
Claims priority, application Belgium, Oct. 12, 1971, 773808; Oct. 4, 1972, 122724
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 P **10 Claims**

Apparatus for public use adapted to detect cardiovascular diseases by checking the heart pulsations and comprising a

sensitive plate arranged on the front side of the apparatus and having marks for positioning the fingers of the user on said plate in combination with means for detecting and transducing the blood pulsations in the arteries of the finger tips of the



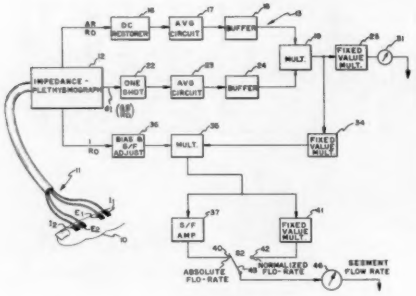
user, means for amplifying electric signals delivered by said transducing means and means connected to the output of said amplifying means for sound, visual and/or graphical display of said amplified signals.

3,835,839

IMPEDANCE PLETHYSMOGRAPH AND FLOW RATE COMPUTER ADJUNCT AND METHOD FOR USE THEREWITH

Larry E. Brown, Walnut Creek, Calif., assignor to Systron Donner Corporation, Concord, Calif.

Filed Dec. 8, 1972, Ser. No. 313,399
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 F **12 Claims**



A computer adjunct for use with an impedance plethysmograph which provides signals related to impedance in a biological segment. Circuit means are included for converting the pulsatile plethysmograph signals to average DC levels and for combining them to provide a signal related to blood hydraulic-flow rate through the biological segment. An adjustable amplifier is provided within the computer for interposing a signal having a predetermined value for providing a normalized signal related to flow rate per volumetric unit of the biological segment. The combination is capable of such measurements for calf segments or thoracic segments.

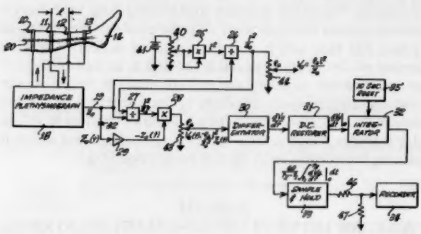
3,835,840

IMPEDANCE PLETHYSMOGRAPHY METHOD AND APPARATUS

Bruce E. Mount, Diamond Bar, Calif., assignor to City of Hope, Los Angeles, Calif.

Filed Sept. 27, 1973, Ser. No. 401,407
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 V **11 Claims**

Apparatus and method for noninvasive measurement of volume rate of flow of blood in an artery. A system using an impedance plethysmograph to measure the impedance of a body section, and circuitry having the impedance signal as an



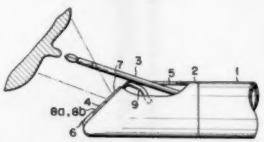
input for developing an output signal proportional to the volume rate of blood flow.

3,835,841

OBLIQUE VIEW TYPE ENDOSCOPE

Masaaki Terada, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 31, 1973, Ser. No. 365,619
Int. Cl. A61b *1/12*
U.S. Cl. 128—5 **7 Claims**



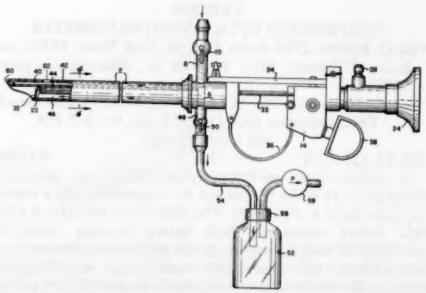
An oblique view type endoscope whose distal end has an inclined end plane provided with a view window to bring a view field obliquely upward, wherein forceps is positioned on the upper side of the distal end to have the end of the forceps brought into the view field.

3,835,842

ENDOSCOPE WITH CONTINUOUS IRRIGATION

Jose J. Iglesias, 1341 North Ave., Elizabeth, N.J. 07208

Continuation-in-part of Ser. No. 268,806, July 3, 1972, and a continuation-in-part of Ser. No. 368,186, June 8, 1973,. This application Sept. 20, 1973, Ser. No. 399,197
Int. Cl. A61b *1/30*
U.S. Cl. 128—7 **13 Claims**



Urological endoscopic instruments known before this invention do not permit continuous clear vision of the operative

field because such vision is periodically obscured by the turbid fluid produced at the operative field. The invention produces continuous clear vision of the operative field by causing continuous inflow of clear irrigating fluid to the operative field and continuous outflow of turbid fluid from the operative field, thus providing a continuously flowing system which is provided by two conduits, one for inflowing clear fluid having its outflow port within the beak of the sheath and below and in front of the objective lens of the telescope which forms part of the instrument, and one for turbid outflowing fluid from the operative field having its inlet port in the exterior of the sheath above the objective lens and to the rear of the beak, so that the inflowing clear fluid must pass through the operative field to reach the inlet port of the outflow conduit, the outflow of fluid being maintained by suction applied to the outflow conduit.

3,835,843

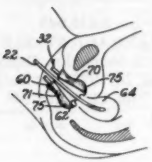
MEDICAL INSTRUMENTS

Harvey Karman, 336 Fowling St., Playa del Rey, Calif. 90291

Division of Ser. No. 157,196, June 28, 1971, Pat. No. 3,769,980, which is a continuation-in-part of Ser. No. 65,816, Aug. 21, 1970, abandoned. This application May 7, 1973, Ser. No. 358,128

Int. Cl. A61b *1/32*

U.S. Cl. 128—17 **8 Claims**



A combination of disposable medical instruments is provided which can be used when performing an abortion including a speculum comprising metal jaw members and disposable plastic tip members. The plastic tip members are fitted on the jaw members in snap-fit relationship and are shaped so that they adequately expose the cervix and tend to bring it forward toward the vaginal opening. A disposable currette or cannula for a suction aspirator is also provided and comprises a tube of plastic material which is sufficiently flexible to permit relatively easy bending of the tube during use and yet sufficiently rigid to maintain the desired tubular configuration during such bending. The tube is provided at its operative end with a pair of holes on opposite sides thereof, each of a size sufficient to pass the embryonic tissue therethrough.

3,835,844

APPARATUS FOR STRETCHING THE SPINE

Friedrich Lang, Landau/Pfalz, Germany, assignor to Lang Weyland GmbH, Landau/Pfalz, Germany

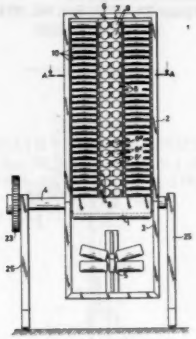
Filed Apr. 6, 1973, Ser. No. 348,490

Claims priority, application Germany, May 29, 1972, 2226073; Oct. 24, 1972, 2252095

Int. Cl. A61h *1/00*

U.S. Cl. 128—33 **11 Claims**

An apparatus for stretching and massaging the spinal column of a human being comprises a chair with a backrest and leg support, with the backrest enclosing a small obtuse angle with the seat, the leg support being parallel to the



backrest, and two rows of vibrators arranged closely spaced along the entire length of the backrest in the center thereof.

3,835,845

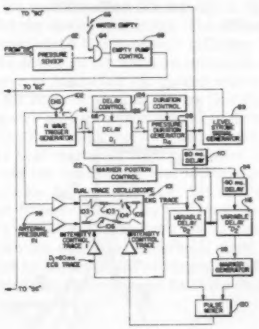
CARDIAC SYNCHRONIZATION SYSTEM AND METHOD

Charles E. Maher, Brockton, Mass., assignor to Medical Innovations, Inc., Waltham, Mass.

Filed Oct. 24, 1972, Ser. No. 300,290

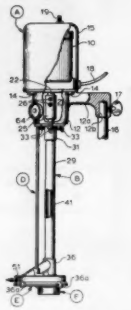
Int. Cl. A61h *9/00*

U.S. Cl. 128—64 **8 Claims**



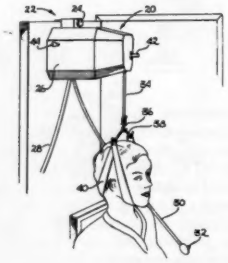
Improved internal circulatory assist apparatus comprising control means whereby the optimum synchronization of the assist apparatus with the beat of the heart can be effectively achieved while using any of a plurality of parts of the body as monitor sites for obtaining an arterial signal representative of the patient's heartbeat. The control means consists of a marker means, such as a pip on an oscilloscope, which is adjustable by variable-delay circuitry throughout a range equal to the time difference between the sensing of a selected cardiac event at an earliest-reacting monitoring site and the sensing of a selected cardiac event at a later-reacting monitoring site.

3,835,846
EASILY DISASSEMBLED AND CLEANABLE HYDROTHERAPY PUMP
Curtis E. Kurtz, Arlington Heights, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed June 28, 1973, Ser. No. 374,280
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 8 Claims



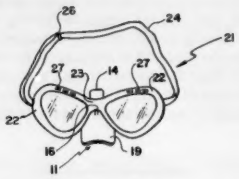
The disclosed hydrotherapy pump, which is used to effect water agitation in a whirlpool tank, may be quickly and easily disassembled without the aid of any tools, after which all of the water-contacting surfaces will be exposed to permit simplified brush cleaning and sterilizing.

3,835,847
PORTABLE INTERMITTENT ORTHOPEDIC TRACTION DEVICE
Fenter Willie Smith, 1133 Coronada Ave., West Covina, Calif. 91790
Filed July 3, 1972, Ser. No. 268,565
Int. Cl. A61h *1/02*
U.S. Cl. 128—75 2 Claims



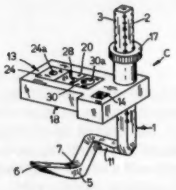
A portable intermittent orthopedic traction device for applying vertical or horizontal cervical traction and horizontal pelvic traction. The device utilizes a reversible motor assembly to apply traction controllable in amount by a simple lever control for a short time period. Thereafter, the motor reverses, relieving the traction for a second short time period whereupon the cycle is again initiated and traction reapplied. A time delay relay provides the timing for the system and a quick release is provided so as to allow the rapid extension or withdrawal of the tension line to a desired position. The device is adapted to connect to a door or bed in a simple and convenient manner.

3,835,848
PERICRANIAL SPLINT AND RETAINER ASSEMBLY
Robert E. Berner, 28 Mansanita Rd., Atherton, Calif. 94025
Filed June 11, 1973, Ser. No. 368,873
Int. Cl. A61f *5/08*
U.S. Cl. 128—76 C 2 Claims



A malleable metal nasal piece is formed to assume a shape which will maintain a desired shape for the wearer's traumatized nose. The final formation of the nasal piece is performed while the nasal piece is adjacent to the wearer's nose. An adjustable elastic pericranial band is attached to a goggle type retention piece having a central member connecting eye pieces. The central member bears against a bridge area on the nasal piece for maintaining pressure between the nasal piece and the wearer's nose when the pericranial band is adjusted to be in tension. A small projection extends from the bridge area of the nasal piece for positioning the central member on the nasal piece.

3,835,849
BONE CLAMP AND ADJUSTABLE DRILL GUIDE
George McGuire, Rt. 2, Orange Ln., Depere, Wis. 54115
Filed Jan. 26, 1973, Ser. No. 327,137
Int. Cl. A61f *5/04*
U.S. Cl. 128—92 EB 7 Claims



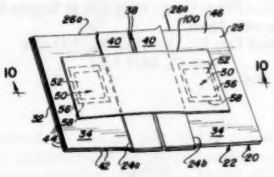
A bone clamp for aiding a surgeon in positioning bones and securing them together and having means for properly orientating drills so that aligned holes may be drilled through the two bones, and also having means for locating the screw to be inserted through the bones to hold them together. One member of the clamp includes a generally V-shaped portion which can be inserted under the innermost bone so that the latter can be accurately located with respect to the guide means for positioning the drills and screw.

3,835,850
INTRAUTERINE CONTRACEPTIVE DEVICE
Irwin S. Lerner, Greenwich, Conn., assignor to A. H. Robins Company, Incorporated, Richmond, Va.
Filed Jan. 7, 1972, Ser. No. 216,047
Int. Cl. A61f *5/46*
U.S. Cl. 128—130 66 Claims

An intrauterine contraceptive device made from plastic and having a perimetral ring with or without a central membrane and including short inwardly directed spurs located on each of

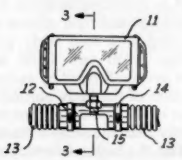
the side portions of the perimetral ring. In addition to the inner spurs, other spurs may be located on the outer side of the perimetral ring. The outer spurs preferably have a retrograde inclination and are of decreasing length from a nose portion of the perimetral ring toward the tail portion, the nose portion being slightly wider than the tail portion providing the IUD with an inverted pear shaped outline when viewed in plan. A marker and extraction string or line is preferably secured at the nose portion but can be secured to the tail portion. Between adjacent inner spurs and between adjacent outer spurs, thin webs may be utilized to provide increased IUD surface area. The webs may or may not be secured to the spurs and may terminate between or beyond the spurs. Internal of the perimetral ring is preferably a membrane joining portions of the ring. Preferably, the membrane should provide openings at least adjacent the nose and the tail to enable use of certain types of inserters. The membrane may be secured at both sides or both ends or it may be secured by a plurality of intermediate narrow membrane portions spaced around the interior of the perimetral portion.

3,835,851
FENESTRATED DRAPE WITH RETAINING MEANS
Frank K. Villari, 1104 S. Maple, Oak Park, Ill. 60304
Continuation of Ser. No. 228,857, Feb. 24, 1972, abandoned. This application Nov. 26, 1973, Ser. No. 419,024
Int. Cl. A61f *13/00*
U.S. Cl. 128—132 D **7 Claims**



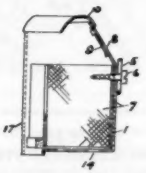
An improved folded drape of the type wherein the drape is provided with adhesive means for securing the drape to the body of a patient, the adhesive means being on outwardly facing surfaces of panels of the drape when in its folded state prior to use, and having a strip-restraining means preventing unfolding of the panels during preparatory maipulation of the drape prior to application over a patient's body extending from and in releasable, covering contact with the adhesive means on one of the panels to and in releasable, covering contact with the adhesive means on another panel.

3,835,852
UNDERWATER BREATHING APPARATUS
Robert Alfred Anderson, 18458 Aguiro St., Huntington Beach, Calif. 91745
Filed Jan. 18, 1973, Ser. No. 324,859
Int. Cl. A62b *7/04;* **A61m** *15/00*
U.S. Cl. 128—146.5 **1 Claim**



Breathing apparatus including a conventional diving mask and a separate mouthpiece to which breathing conduits are connected. The mouthpiece includes protrusions to be gripped by the mouth of the user. A duct connects and communicates the mouthpiece and the facemask and has a disconnect therein of a type that could easily be separated and includes one-way valves in the respective separated ends that prevents seepage into the mask or mouthpiece.

3,835,853
BREATH WARMING DEVICES
Edgar P. Turner, Box 70, Scotch Plains, N.J. 07076
Filed Nov. 16, 1971, Ser. No. 199,141
Int. Cl. A61m *16/00*
U.S. Cl. 128—212 **2 Claims**



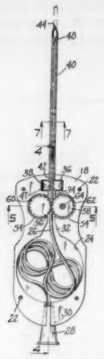
This invention pertains to breath warming devices and particularly of the self contained type wherein heat and moisture from the exhaled breath is utilized to warm and humidify the ensuing inhaled breath. Under arctic conditions air of temperature as low as minus 50 degrees F. may be inhaled. Under such conditions approximately 44 percent of the total heat generated within the body is lost through breathing.

Previous attempts to develop self contained breath warming devices have met with discouragement because at low ambient temperatures ice and frost formation tends to block the air flow and render the device inoperable. The subject invention discloses a design which is free of such difficulty. The design employed in the device incorporates an automatic valve which opens responsive to increasing air friction within the device when frost or ice begin to obstruct the air flow therethrough. The valve operates only to bypass a portion of inhalation air while leaving the flow and volume of exhaled air unaffected. The amount of heat recovered from exhalation thus remains constant whereas the demand for heat to warm inhaled air is decreased when ice begins to form in the unit. Due to this change in heat balance further ice does not form, and the device remains operative despite very low ambient temperature. Also shown are additional features of novel nature particularly related to improvement of means for effecting efficient and comfortable mounting and fit of the device relative to the face of the wearer.

3,835,854
CATHETER ADVANCING DEVICE WITH NIP ROLLERS
Warren R. Jewett, Orange, Conn., assignor to Jewett-Ashley Holding Corp., Milford, Conn.
Continuation of Ser. No. 15,039, Feb. 27, 1970, abandoned. This application Oct. 6, 1972, Ser. No. 296,204The portion of the term of this patent subsequent to Sept. 17, 1974, has been disclaimed.
Int. Cl. A61m *5/00*
U.S. Cl. 128—214.4 **13 Claims**

A device for inserting a catheter into a body such as a ves-

sel, vein, artery or channel comprising a housing member adapted to receive a flexible catheter and having a hollow nee-



dle for guiding the catheter. A drive moves the catheter through this needle.

3,835,855

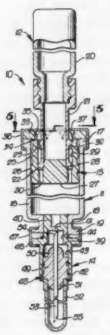
MULTI-CHAMBERED SYRINGE

Courtland Hilyard Barr, Jr., 4910 Vineta Ave., La Canada, Calif. 91011

Filed Oct. 10, 1972, Ser. No. 295,864

Int. Cl. A61m *5/18*

U.S. Cl. 128—218 M **8 Claims**



A syringe having two reservoirs each adapted to contain a separate material, the materials being normally incompatible, having means whereby said materials can be mixed together in the syringe without affecting their sterile condition, and having means whereby the mixture of such materials can be ejected from the syringe.

3,835,856

TAMPON APPLICATOR

Niels Warncke, Metzkausen, Germany, assignor to Dr. Carl Hahn GmbH, Dusseldorf, Germany

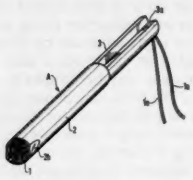
Filed Feb. 26, 1973, Ser. No. 336,105

Claims priority, application Germany, Feb. 29, 1972, 7207682

Int. Cl. A61f *13/20, 15/00*

U.S. Cl. 128—263 **13 Claims**

An improvement in a tampon applicator comprising applicator sleeve, said sleeve comprising an insertion end adapted to carry a tampon and a rearward portion adapted to house the tampon ejector, a tampon ejector housed within said rearward portion and ridable in said sleeve, the improvement wherein said insertion end has at least one flat portion in



the sleeve to define a tampon applicator with a cross-sectional area less than said rearward portion; and improvement in such tampon applicator wherein said tampon ejector has a radially, inwardly directed V-shaped indentation and is otherwise tubular, said ejector made from a resilient, yieldable material which tends to return said tampon ejector to one wherein its cross-section is circular.

3,835,857

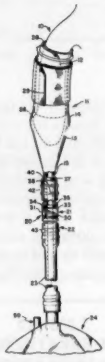
MALE URINAL DEVICE

Crit H. Rogers, III, Bloomington, Minn., and Joseph Sarto Rocheleau, Jr., Tiller, Oreg., assignors to Rogers Industries, Inc., Minneapolis, Minn.

Filed Feb. 12, 1973, Ser. No. 331,684

Int. Cl. A61f *5/44*

U.S. Cl. 128—295 **7 Claims**



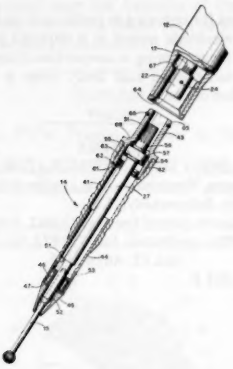
A male urinal device in which the possibility of any backup of urine around the penis is minimized. The urinal device comprises a urine receptacle connected through a flexible tube to a sheath adapted to be placed over and secured to the penis of the user, the sheath consisting of a thin body portion of resilient material of a thickness between 0.005 and 0.012 inches and relatively large and rigid conical and tubular portions integrally formed with said body portion and of a thickness of between 0.050 and 0.100 inches. There is preferably a bulbous portion formed by extending the conical portion in the direction of the body portion sufficiently that the internal diameter of the conical portion where it joins the body portion is greater than the normal diameter of the body portion, thus providing the bulbous portion without resulting in reentry curves between the body portion and the tube. The conical portion has an internal volume sufficient to accommodate sudden discharges of urine resulting from artificial stimulation of the bladder. The receptacle has a vent therein

for escape of air but not of urine as urine enters the receptacle. The receptacle can be disconnected from the sheath by a detachable coupling in the tubing, said detachable coupling having a relatively uniform diameter therein which at no point is less than the internal diameter of the tube.

3,835,858
SURGICAL AIR DRILL

Clarence A. Hagen, Long Beach, Calif., assignor to Edward Weck & Company, Inc., Long Island, N.Y.

Filed Sept. 5, 1972, Ser. No. 286,465
Int. Cl. A61b *17/00*
U.S. Cl. 128—305 **1 Claim**

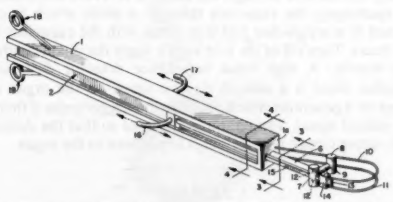


An improved surgical air drill having a novel, detachable hand piece assembly with an integral cutting burr. The hand piece is interchangeable with others having different burrs or cutting heads and may be removed and replaced while the drill motor is operating at full speed. The particular configuration of the coupling between the motor and the hand piece permits such interchanging to be accomplished with ease while assuring that the burr remains axially true.

3,835,859
SURGICAL INSTRUMENT

Robert R. Roberts, Rt. No. 1, Frederick, Md. 21701, and Leo J. DiGioia, 18916 Diary Rd., Gaithersburg, Md. 20760

Filed Feb. 22, 1973, Ser. No. 334,726
Int. Cl. A61b *17/32*
U.S. Cl. 128—305 **9 Claims**

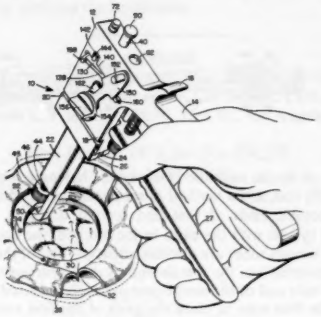


A surgical instrument including a flexible track operatively connected to a handle and adapted to be extended therefrom into a knee cavity to conform to the interior configuration of the knee cavity, and a blade slidably mounted on the track and constrained to move thereon for cutting damaged or broken cartilage from the knee cavity.

3,835,860
SURGICAL BONE PUNCH

Henry D. Garretson, 517 Tiffany Ln., Louisville, Ky. 40207

Filed June 21, 1973, Ser. No. 372,029
Int. Cl. A61b *17/16;* **B26f** *1/14*
U.S. Cl. 128—310 **16 Claims**

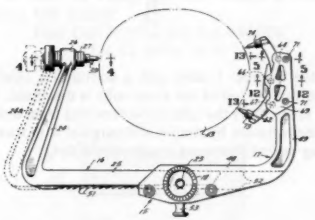


A surgical instrument for punching holes in bone or other substantially solid matter such as cartilaginous tissue. A relatively easy to operate trigger mechanism permits a very large force to be applied to the punch to penetrate the bone. The punch is advanced incrementally by means of a ratchet mechanism, and a reversible floating ratchet assembly permits the instrument to supply substantially the same force to an elongated surgical punch for both driving and retracting purposes. The device may also be used for cutting hard tissue or shaping other materials such as surgical metal plates due to the large forces which it is capable of developing.

3,835,861
SURGICAL HEAD CLAMP

George Kees, Jr., Alexandria, Ky., and Horst R. Hickmann, Anderson Twp., Hamilton City, Ohio, assignors to Kees Surgical Specialty Company, Cincinnati, Ohio

Filed Dec. 8, 1972, Ser. No. 313,333
Int. Cl. A61b *19/00;* **A61g** *13/00*
U.S. Cl. 128—346 **5 Claims**

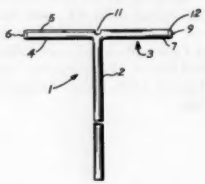


A surgical head clamp including two L-shaped main sections in which rack teeth on a first arm of one section are engaged by a pawl carried by a first arm of the other section. The main sections are arranged with the first arms thereof in sliding relation. Opposed head engaging means are disposed on second arms of the main sections. A single head engaging means is mounted on one of the second arms. The head engaging means on the other second arm includes a pair of pins mounted at opposite ends of an arcuate bar. The arcuate bar is slidably mounted on said other second arm.

3,835,862
STERILE CAPS FOR A LIQUID DRAINAGE SYSTEM AND METHOD
Frank K. Villari, Oak Park, Ill., assignor to The Kendall Company, Walpole, Mass.
Filed Feb. 20, 1973, Ser. No. 333,909
Int. Cl. A61m *25/00*
U.S. Cl. 128—349 R **13 Claims**

A pair of sterile nestable closure caps having a female end and a male end, and a method of aseptically protecting the interconnectable ends of first and second tubes in a liquid drainage system with the caps. In the method, the ends of the first and second tubes are disconnected, the end of the second tube is inserted into the female end of the sterile nested caps, and the male end of the sterile nested caps is inserted into the end of the first tube to close the ends of the first and second tubes. The nested caps are then separated, whereby the ends of the disconnected first and second tubes are aseptically closed by the caps.

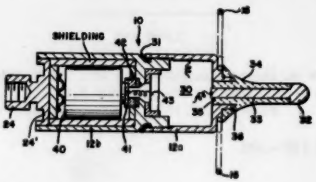
3,835,863
T TUBE
Edward M. Goldberg, Glencoe, and Seymour Bazell, Morton Grove, both of Ill., assignors to MPC/KurgiSil, Skokie, Ill.
Filed May 15, 1973, Ser. No. 360,579
Int. Cl. A61m *25/00*
U.S. Cl. 128—350 R **3 Claims**



A flexible surgical T tube with a continuous open slit extending across the top of the cross tube is disclosed. This improved T tube allows the tube to be removed from a duct after surgical implantation by simple non-surgical withdrawal while minimizing wound stress and trauma in the duct.

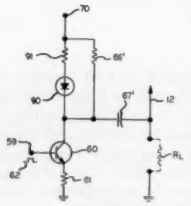
3,835,864
INTRA-CARDIAC STIMULATOR
Ned S. Rasor, and Joseph William Spickler, both of Dayton, Ohio, assignors to Rasor Associates, Inc., Dayton, Ohio
Filed Sept. 21, 1970, Ser. No. 73,809
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 P **7 Claims**

A stimulator device for insertion in a living body and having particular advantage for intra-cardiac use comprising a structure having a body form of a size and configuration to enable its transvenous or transarterial insertion, the surface of said body form providing electrode means for contact with a portion of the living body to be stimulated by said electrode means, and means mounted to project outwardly of and peripherally of said body form including anchor portions locating in a position displaced from said electrode means and



providing means for engaging in portions of said living body to establish said electrode means in a required position of use, said electrode means having in connection therewith means to energize the same once said body form is located in its required position of use.

3,835,865
BODY ORGAN STIMULATOR
David Lee Bowers, Wauwatosa, Wis., assignor to General Electric Company, Schenectady, N.Y.
Continuation-in-part of Ser. No. 53,842, July 10, 1970, abandoned. This application July 7, 1972, Ser. No. 269,611
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 P **8 Claims**

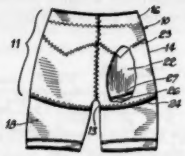


The output circuit of an electric stimulator is connected to an organ such as the heart through a coupling capacitor. A semiconductor switch is triggered with a short pulse so that it partly discharges the capacitor and stimulates the organ. Immediately following the turn off of the first switch, a second switch is activated to recharge the capacitor to its initial state during which time reverse current is delivered momentarily to the heart. In one embodiment, after the first switch turns off to terminate the discharge of the capacitor which stimulates the heart, the current through the heart is reversed immediately by recharging the capacitor through a diode which is connected to a supply line and is in series with the capacitor and the heart. Turn-off of the first switch starts the diode conducting heavily. A high input impedance detector determines whether there is a natural electric signal on the organ and turns on a generator which provides the trigger pulse if there is no natural signal. The circuit is arranged so that the detector and output circuit present a high impedance to the organ.

3,835,866
PANTY GIRDLE WITH STRETCHABLE LEG SUPPORT
Juanita L. Brooks, Los Angeles, Calif., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Jan. 18, 1974, Ser. No. 434,658
Int. Cl. A41c *1/00*
U.S. Cl. 128—547 **9 Claims**

An article of intimate wearing apparel for females of the panty girdle type, wherein a vertically stretchable elastic back

panel supports the back leg portions of the article and provides extensibility to the back leg portions relatively independently of the main body portion of the article upon flexing of



the article by the wearer. The main body portion of the article is adapted to extend over the buttocks of the wearer and preferably normally covers the elastic back panel when the article is in use in an unflexed condition.

3,835,867

WIGS

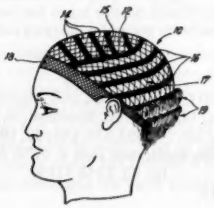
Rene Molinario, Paris, France, assignor to Molinario S.A., Paris, France

Filed Aug. 19, 1971, Ser. No. 173,205

Claims priority, application France, Aug. 21, 1970, 70.30812

Int. Cl. A41g *3/00*

U.S. Cl. 132—5 **3 Claims**



A wig comprising a cap of elastic net formed of alternating zones of fine and wide mesh, strips of hairs being attached only to the fine mesh zones. The strips are formed from a number of hairs attached transversely to at least one thin elastic support.

3,835,868

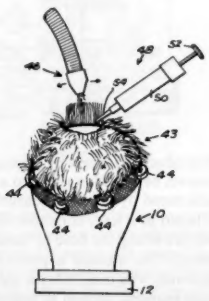
METHOD AND APPARATUS FOR MAKING HAIRPIECES

Walter Heck, 5260 Schaefer Rd., Dearborn, Mich. 48126

Filed May 16, 1973, Ser. No. 360,655

Int. Cl. A41g *3/00*

U.S. Cl. 132—5 **23 Claims**



Foundation fabric with attached hair strands is fitted over a heated human head shaped form. The strands are drawn by a vacuum to an erect position in which they extend away from the fabric at an abrupt angle. Liquid resin is applied to the bases of the erect strands by a syringe and is partially cured by the heat to tacky condition. The form is then heated to a higher temperature to completely cure the resin with the strands emerging therefrom at an abrupt angle.

The form is hollow and has internal electrical resistance heating elements. When the form is made of a ferromagnetic metal, magnets are provided for securing the fabric to the form while applying the liquid resin.

3,835,869

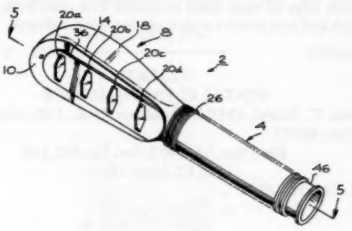
AIR GUIDE AND HAIR BRUSH SUPPORT DEVICE

Martin Newman, 1203 N. Sweetzer, Los Angeles, Calif. 90060, and Alvin L. Frankel, 6038 W. 75th St., Los Angeles, Calif. 90045

Filed June 27, 1973, Ser. No. 374,271

Int. Cl. A45d *20/50*

U.S. Cl. 132—9 **8 Claims**



An air guide and hair brush support device is provided which has a hollow handle contiguous at one end with a hollow enclosure. The hollow enclosure has a bottom wall containing a plurality of vents. Air guide means are disposed within the enclosure for defining separate air channels to each of the vents whereby each vent is in separate air flow communication with the hollow handle. The bottom wall of the enclosure is adapted to releasably support a hair brush unit which is provided with openings which overlap the vents in the bottom wall. The hollow handle, which is provided with a plurality of spaced grooves, is connected, at its outer end, to a portable hair dryer through a flexible air conduit.

3,835,870

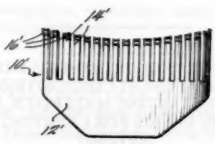
HAIR TREATING INSTRUMENT AND METHOD

Willmar K. Sick, 34 Village Sq., The Village of Cross Keys, Baltimore, Md. 21210

Filed Oct. 2, 1972, Ser. No. 294,078

Int. Cl. A45d *24/00*

U.S. Cl. 132—160 **5 Claims**



A comb for use in streaking or highlighting hair with bleach or dye has parallel side-by-side teeth disposed in a curved plane approximating the curvature of the head and curved radially outwardly at their outer ends to define foot portions. In use the comb is placed at an angle to the scalp, with the foot portions of the teeth holding strands of hair against the scalp. Alternate strands of hair are manually lifted between the teeth for treatment with bleach or dye.

3,835,871
COLLAPSIBLE COSMETIC HAIR ROLLER

Frank A. Roccanova, Brooklyn, N.Y., assignor to Phenomenon Productions, Inc., Brooklyn, N.Y.

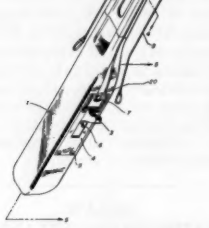
Division of Ser. No. 161,069, July 9, 1971, abandoned. This application Jan. 2, 1973, Ser. No. 320,635
Int. Cl. A45d 2/02
U.S. Cl. 132—39 2 Claims

A collapsible cosmetic hair roller consisting of a multiplicity of telescoping sections of generally cylindrical shape which interlock edge to edge upon extension to a preselected desired length and nest section within section upon collapse.

3,835,872
DENTAL CLEANING DEVICE

Heston C. Daniel, 6955 N. Academy Blvd., Colorado Springs, Colo. 80907

Filed Nov. 16, 1972, Ser. No. 307,194
Int. Cl. A61c 12/00
U.S. Cl. 132—92 R 1 Claim



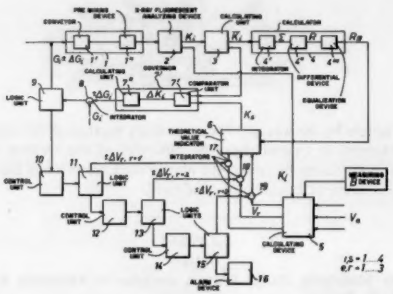
Apparatus for holding and tightening a flexible cord for dental cleaning, comprising a handle having a detachable yoke for tautly supporting a run of said cord and a pair of anchor pins carried by the handle, one of which is attached to a reciprocable trigger mounted in the handle for tensioning the cord.

3,835,873
METHOD FOR THE PRODUCTION OF A MIXTURE WITH CONSTANT COMPONENT COMPOSITION MADE OF SEVERAL STARTING MATERIALS, AND A REGULATING DEVICE FOR CARRYING OUT THE METHOD

Hubert Wildpaner, Bensberg-Frankenforst, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Koln, Germany

Filed Nov. 13, 1972, Ser. No. 306,040
Claims priority, application Germany, Nov. 13, 1971, 2156498
Int. Cl. C04b 7/38
U.S. Cl. 137—3 10 Claims

A method of producing a mixture with constant component composition from a plurality of starting materials, each of which contains a portion of the components of the required composition, the starting materials being premixed in dosages, preferably analyzed by an X-ray fluorescence process and supplied to a homogenization means, the dosaging of the starting materials further taking place within a predetermined dosage range in dependence upon the premixture component com-

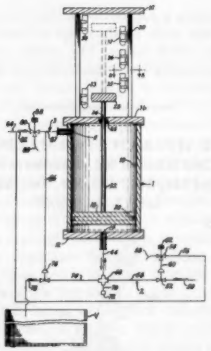


position established in the analysis and under maintenance of predetermined component proportions, while upon passing beyond the predetermined dosage range of one of the starting materials upwardly or downwardly, at least one of the predetermined component proportions is stepwise changed until the predetermined dosage range has been restored. The invention also includes means for carrying out said method.

3,835,874
METHOD OF INTRODUCING LIQUID DOSES

Frank Dellasala, 1459 59th St., Brooklyn, N.Y. 11219

Division of Ser. No. 692,874, Dec. 22, 1967, Pat. No. 3,570,524. This application June 9, 1970, Ser. No. 44,795
Int. Cl. F16k 51/00
U.S. Cl. 137—15 4 Claims



Method of introducing accurately measured doses of liquid that may, if desired, be varied in size into a product in process of being manufactured by use of a measuring chamber that is filled with the liquid to a level corresponding to the predetermined dose and delivering the dose by superatmospheric pressure displacement. The method is preferably carried out by the use of apparatus which includes a measuring cylinder, a fluid-tight piston movable therein to selected heights to measure out a dose of selected variable size and means to force the liquid into a discharge line leading to the product being made by applying force to the piston in the direction of the opening

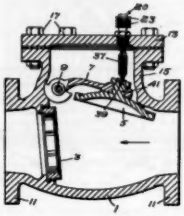
into the discharge line. The method is particularly useful in dosing a slurry in which the solid particles are kept suspended by agitation before and during the dosing operations. A water flush of the apparatus after each dosing may also be carried out. The method can be used for dosing two or more products or batches of the same product by providing branch delivery lines connected with the delivery line from the measuring cylinder. The operation can be automated, manual or a combination of both.

3,835,875

SAFETY CHECK VALVES FOR GAS LINES

Lynn H. Morse, Venice, Fla., assignor to OMCO Inc., Holden, Mass.

Filed Apr. 20, 1973, Ser. No. 352,982
Int. Cl. F16k *17/38*
U.S. Cl. 137—75 **1 Claim**



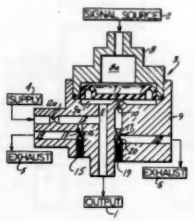
This device is an improvement on prior types of heat-actuated safety check valves for gas supply lines which hold the valve member from closing by use of fusible metal restraining means linking the valve member to its housing. Here the fusible metal is formed as a solid body retained in a hollow plug screwed through the valve housing, with an open-coil spring imbedded in the fusible metal and forming a flexible linkage between the fusible metal and the valve member holding the valve open.

3,835,876

FLUID SIGNAL LIMITING DEVICE

Richard N. Laakaniemi, and Robert R. Stahl, both of Milwaukee, Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Nov. 18, 1971, Ser. No. 199,893
Int. Cl. G05d *16/00*
U.S. Cl. 137—82 **7 Claims**



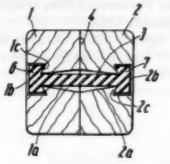
A pneumatic signal limiter includes an integrated fluidic repeater and variable restrictor assembly having a pair of telescoping interconnected input and output body members with opposing and complementary recessed faces defining an input chamber and an output chamber to opposite sides of a diaphragm. The output portion includes an exhaust orifice and passageway within which a variable low limit restrictor is mounted to control the exhaust flow. The output body further includes an output passageway and intersecting exhaust passageway with an adjustable high limit restrictor connected directly to the exhaust passageway. The supply is connected to the output passageway in series with a restrictor through the intersecting passageway or a separate connection. Each restrictor is a needle valve which is adjustably secured within the housing with a conical point within a related limiter orifice. The threaded pin valve member has a relatively small cone angle and very fine adjusting threads. A closed loop control system includes a controller connected to sensors from a controlled variable source and from a master variable source through limiters. The controller is connected via a limiter to a control apparatus for the controlled variable unit.

3,835,877

NIPPING-SHUTTLE FOR WEAVING

Rudolf Rietzler, Ramsdorf, Germany, assignor to Franz Schulten, Weberei-und-Bekleidungswerke, Ramsdorf, Germany

Filed Feb. 5, 1973, Ser. No. 329,829
Claims priority, application Germany, Apr. 25, 1972, 2220232
Int. Cl. D03j *5/08*
U.S. Cl. 139—207 **6 Claims**



A weaving shuttle in which a bobbin is removably retained between separable clamping portions and in which the separable portions are retained in clamping relation by a transverse, elastic pin, under tension, the pin extending through co-axial bore portions of the clamping portions and the clamping portions and the bores converging from a mating plane of juxtaposed clamping parts to facilitate introduction of retention heads at opposite ends of the pin; the pin heads having inner annular undercut portions for providing a relief when compressing the pin head through outer ends of the converging bores and cooperating with complimentary seats in enlarged recesses opening into outer sides of the respective clamping parts in which the recesses have a convergent shoulder portion tending to retain the heads in the recesses; the pin being of uniform cross section or having a central enlarged portion, the central enlargement being double-consent toward the heads; the central enlargement preventing lateral twisting of the cooperating clamping portions.

3,835,878

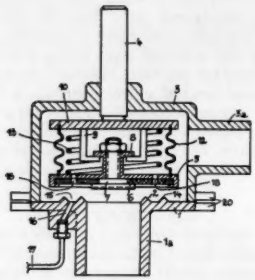
SHUTOFF VALVE WITH LEAK INDICATING MEANS

Helfried Braidt, Edward Potzl-Gasse, Vienna 1190, and Johann Figl, Fleischmanngasse 4, Vienna 1040, both of Austria

Filed Feb. 2, 1973, Ser. No. 329,173
Claims priority, application Austria, Feb. 4, 1972, 934/72
Int. Cl. F16k *25/02*; **G01m** *3/28*
U.S. Cl. 137—246.13 **4 Claims**

Leaks between the valve head and the valve seat of a shutoff valve are detected by providing an air containing housing attached to the valve head and moving therewith into a shut position in respect of a valve seat. The air pressure in the housing increases during the valve shutting movement and a

chamber closed by engagement of the valve head and the valve seat when the valve is shut is in communication with the



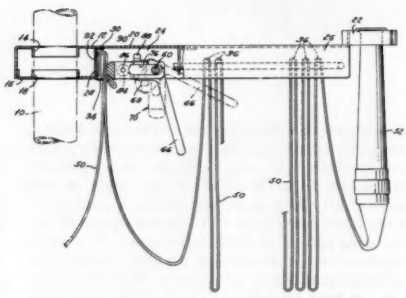
interior of the housing and the exterior of the valve so that pressure changes due to a leak between the valve seat and valve head may be measured.

3,835,879

HOSE RACK ASSEMBLY

Charles J. Thoman, Wauseon, Ohio, assignor to Seco Manufacturing, Inc., Wauseon, Ohio

Filed Apr. 9, 1973, Ser. No. 349,076
Int. Cl. B65h *75/46*
U.S. Cl. 137—355.18 **9 Claims**



A Hose Rack Assembly for providing a water cut-off clamp at the root end of the hose to permit hose extension and remote release including a pivoted hose rack and a clamp at the proximal end of the rack for closing off the hose passage. Includes a pivoted hose clamp bar in conjunction with a clamp actuator adapted for manual clamping and hose tension release, the clamp bar being shiftable to adapt to varying thickness and types of hose.

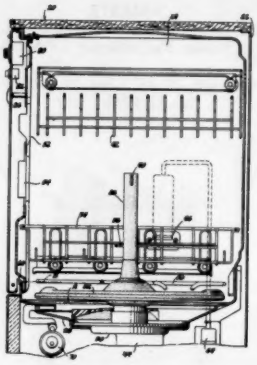
3,835,880

DISHWASHER FILL SYSTEM

Robert E. Hoffman, Centerville, and Carl J. Wright, Bellbrook, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 10, 1973, Ser. No. 387,522
Int. Cl. F16k *21/18*
U.S. Cl. 137—387 **5 Claims**

A domestic dishwasher is provided with a combined time and fill level control system which insures a proper fill level throughout a wide range of reasonably available domestic water supply pressures, guards against floods occasioned by a clogged drain and malfunctioning timer or water level switch and assures the advance of a dishwashing cycle irrespective of fill level where domestic water supply pressures are unreasonably low. The system includes a continuously running timer during fill having a timer controlled fill switch connected in series with a pressure actuated water level switch. The pressure switch controls fill when the dishwasher is supplied with water at normal supply pressures and guards against floods occasioned by a clogged drain and malfunctioning timer. The timer controls fill to advance the cycle by shunting the pressure switch when the dishwasher is supplied with water at unreasonably low supply pressures and guards against floods occasioned by a malfunctioning pressure switch by opening the fill switch.

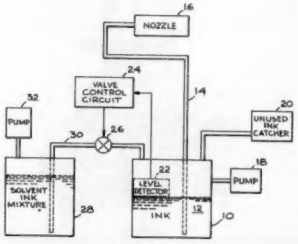


3,835,881

METHOD FOR CONTROLLING INK CHARACTERISTICS

Henry A. Dal, Mount Prospect, and Robert I. Keur, Niles, both of Ill., assignors to A. B. Dick Company, Chicago, Ill.

Filed Dec. 29, 1972, Ser. No. 319,852
Int. Cl. F16k *31/02*
U.S. Cl. 137—389 **6 Claims**

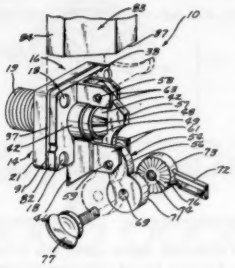


In the operation of an ink jet printing system which recycles unused ink, changes in the formulation of the ink being used for printing which can cause deterioration of printing, is avoided by an arrangement for sensing the amount of ink in an ink reservoir and replenishing it when below a predetermined level, with a solvent-ink mixture which restores the ink in the reservoir to a proper formulation.

3,835,882
FLOAT VALVE ASSEMBLY

Bernard A. Barker, Monticello, Iowa, and Ronald L. Daggett, Madison, Wis., assignors to Franklin Equipment, Inc., Monticello, Iowa

Filed Oct. 15, 1973, Ser. No. 406,607
Int. Cl. F16k *31/26*
U.S. Cl. 137—445 6 Claims

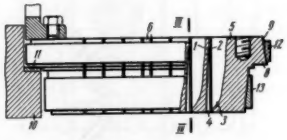


The valve assembly is of an all plastic construction and requires no tools for normal disassembly and service purposes. A valve plunger having a replaceable and reversible seat member is actuated by a pair of coacting pivoted lever members which are moved by a float arm unit to valve opening and closing positions. On manual movement of the lever members to a third servicing position the valve plunger is readily removable from the valve assembly for servicing or replacement of the seat member thereon.

3,835,883
STRAIGHTWAY VALVE

Mark Isaakovich Frenkel, ulitsa Karbysheva, 6, korpus 2, kv. 20, Leningrad, U.S.S.R.

Filed Aug. 15, 1973, Ser. No. 388,419
Int. Cl. F16k *15/16*
U.S. Cl. 137—512.1 5 Claims



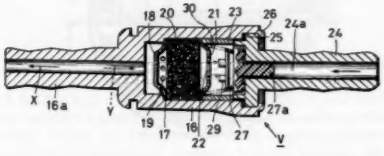
A straightway valve for compressors in which there is provided a disk defined by flat seats and elastic plates clasped or clamped by shrink rings. The valve has a supporting shoulder for installation in a compressor cylinder. One of the shrink rings is mounted upon the lateral surface of the shoulder.

As a result, the valve has a comparatively low height and, consequently, a comparatively low resistance and dead-zone volume and is suitable for use in high-speed compressors.

3,835,884
NEGATIVE PRESSURE CIRCUIT ARRANGEMENT HAVING A CHECK VALVE

Masakazu Ishikawa, and Sadayoshi Itou, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabioshiki Kaisha, Toyota-shi, Japan

Filed Dec. 7, 1972, Ser. No. 312,930
Claims priority, application Japan, Sept. 11, 1972, 47-91124
Int. Cl. F16k *15/06*
U.S. Cl. 137—550 2 Claims

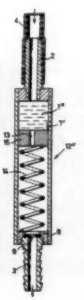


A negative pressure generating arrangement for an operably associated internal combustion engine and booster brake system for a motor-vehicle, and more particularly, a check valve for use in such an arrangement to permit the flow of a clean fluid in one direction therethrough and prevent the flow of an impure fluid tending to flow therethrough in the opposite direction, the check valve including a filter for removing impurities from the impure fluid prior to its reaching a valve member to thereby maintain the valve member in a clean condition.

3,835,885
ARRANGEMENT FOR METERED FLOW OF LIQUIDS

Artur Kreyenberg, Langenharmerweg, Germany, assignor to Johannes Bockemuehl, Gummersbach-Derschlag, Germany

Filed Oct. 17, 1972, Ser. No. 298,275
Claims priority, application Germany, Oct. 18, 1971, 2151786
Int. Cl. G01p *5/14*
U.S. Cl. 137—551 6 Claims



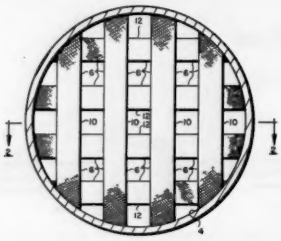
A housing has a chamber provided with an upper inlet connected with a liquid supply, and with an outlet connectable with a user. A pressure indicator is located in the chamber, and a set of washers is provided which can alternately be inserted into the chamber in the region of the outlet to extend across the entire cross-sectional area of the chamber, with each washer having a different flowthrough opening, so that depending upon the size of the opening the flow through the chamber per unit of time can be predetermined.

3,835,886

POROUS TUBE INJECTOR

Lawrence J. Zajac, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 14, 1972, Ser. No. 315,038
Int. Cl. F16k *19/00*
U.S. Cl. 137—604 7 Claims



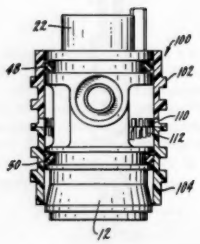
A fluid injection system for uniformly mixing gases comprising a primary gas conduit; and a plurality of banks of injector tubes with each of said tubes formed with a plurality of radial openings communicating the interior of said tubes with the interior of said conduit, said tubes extending transversely across said conduit with the tubes of each of said banks extending perpendicular to the tubes of each adjacent bank and having the number of tubes in each bank and the size and spacing of said tubes determined so as to provide the maximum tube area possible while maintaining a predetermined minimum Reynolds number of primary gas flowing through said primary gas conduit and ensuring sufficient cooling of said tubes to maintain structural integrity.

3,835,887

VALVE CONSTRUCTION WITH WATER MODULATION

Paul A. Mongerson, Elyria, and Alfred M. Moen, Grafton, both of Ohio, assignors to Stanadyne, Inc., Windsor, Conn., by said Mongerson

Continuation-in-part of Ser. No. 167,239, July 29, 1971. This application Feb. 7, 1973, Ser. No. 330,445
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.41 5 Claims



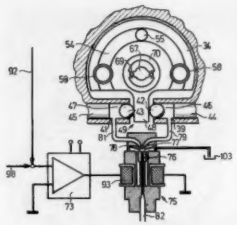
A mixing valve including a body member having inlet passages terminating on the exterior thereof in spaced relation, one from another. A handle member is movable on the body member and defines a mixing chamber. The handle member and body member cooperate to modulate the fluid passing to the mixing chamber to provide a greater degree of handle rotation in the comfort zone.

3,835,888

ELECTRO HYDRAULIC SERVO CONTROL VALVE

Volkmar Leutner, Hemmingen, and Roman Romes, Friolzheim, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 3, 1972, Ser. No. 303,634
Claims priority, application Germany, Dec. 7, 1971, 2160490; Dec. 7, 1971, 2160488; Dec. 7, 1971, 2160489
Int. Cl. F15b *13/043*
U.S. Cl. 137—625.61 16 Claims



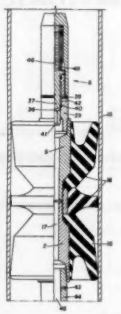
An electro hydraulic servo valve has a valve slide plate mounted in a housing for angular movement between positions in which inlet and outlet conduits and consumer conduits are connected and disconnected. The permanent magnet of a transmitter turns with the valve slide plate and cooperates with flux responsive elements so that a first signal representing the position of the valve slide plate is generated, and supplied to a first input of a differential amplifier whose second input receives a second signal representing a desired position of the valve slide plate. The differential amplifier forms a differential signal representing the difference between the desired and actual positions which is supplied to the electric input of an electro fluidic transducer whose fluidic output controls a hydraulic setting motor to move the valve slide plate from the actual position to the desired position.

3,835,889

EXPANDABLE PIPELINE PLUG

Walter E. Hyde, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Mar. 31, 1972, Ser. No. 240,071
Int. Cl. F16l *55/12*
U.S. Cl. 138—93 9 Claims



A pipeline leak locator plug having an expanding seal means responsive to hydrostatic pressure differential, a seal body with elastomeric sealing cups and a pair of hydrostatically operated valves; one valve being positioned between the expanding seal means and the seal body and the other valve positioned on the opposite side of the seal body. The valves

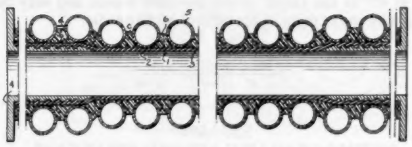
operate in response to hydrostatic pressure in the pipeline and cooperate to allow tye leak locator plug to be flowed down the line to a desired position and the expanding seal means to be activated, thereby dividing the section of pipeline into two fluidically sealed units whereby the location of a leak in the pipeline can be determined.

3,835,890

BUOYANT LIQUID-CONVEYING HOSE

Angelo S. Miceli, Detroit, Mich., assignor to Uniroyal, Inc., New York, N.Y.

Filed Mar. 29, 1973, Ser. No. 346,207
Int. Cl. F16l *11/12*
U.S. Cl. 138—103 **6 Claims**



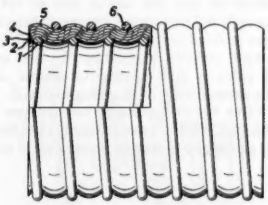
A buoyant liquid-conveying hose which minimizes loss in buoyancy due to physical damage of the buoyancy material and which minimizes any decrease in the volume of the buoyancy material caused by ambient conditions of temperature and external pressure. The hose comprises a hose body and a plurality of rigid buoyant annuluses and a plurality of resilient buoyant spacer annuluses of closed cell expanded plastic material between the rigid annuluses and adherent to the hose body and having lateral surfaces complementary to the surfaces of the rigid annuluses.

3,835,891

FLEXIBLE HOSE

Joseph White, Manchester, England, assignor to Compoflex Company Limited, Lancashire, England

Filed May 20, 1971, Ser. No. 145,392
Claim priority, application Great Britain, June 2, 1970, 26636/70
Int. Cl. F16l *11/10*
U.S. Cl. 138—125 **8 Claims**



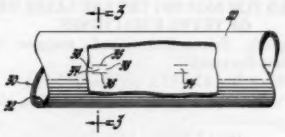
The invention relates to a hose or tube which has an inner lining which consists of an inner helical wire with at least one layer of fluorinated ethylene propylene copolymer superposed thereon. The inner wire is preferably coated with fluorinated ethylene propylene copolymer of polytetrafluoroethylene. For the conveyance of chemicals layers of polypropylene fabric and polypropylene film are laid on the copolymer and for the conveyance of high temperature substances asbestos cloth and polypropylene fabric. The whole is encased in an outer cover coated with PVC and surrounded by wire.

3,835,892

DOUBLE WALL EXHAUST PIPE

Robert C. Keller, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 24, 1972, Ser. No. 309,421
Int. Cl. F16l *9/18*
U.S. Cl. 138—178 **2 Claims**



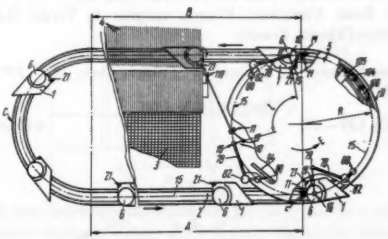
A double wall exhaust pipe comprising inner and outer conduits includes a plurality of inwardly lanced strips on the inner conduit which are reformed to their original position. The lanced strips yield upon pressure buildup between the conduits to allow pressure venting while maintaining a double wall thickness resistance to corrosion.

3,835,893

DEVICE FOR WINDING WEFT THREAD ON THE SPOOLS OF WEFT CARRIERS IN TRAVELLING WAVE LOOMS

Alexandr Lvovich Galperin, ulitsa Moldagulovoi, 10, korpus 3, kv. 166; Albert Semenovich Serebryannikov, ulitsa Krasikova 3, korpus 2, kv. 63; Alexandr Alexandrovich Zabotin, Profsojuznaya ulitsa, 96 kv. 85; Eduard Arshakovich Onikov, ulitsa Panferova 5, korpus 2, kv. 106, all of Moscow; Vladimir Iosifovich Lukoshkov, Kooperativnaya ulitsa, 19, kv. 33, Shuya Ivanovskoi Oblasti; Valeryan Petrovich Lileev, ulitsa Nagornaya 46/48, korpus 20, kv. 2, Moscow; Evgeny Dmitrievich Loschilin, Kashirskoe shosse, 36, kv. 87, Domodedovo Moskovskoi Oblasti; Zinovy Yakovlevich Rutkevich, Medvedkovo, 8 kvartal, korpus 18, kv. 21, Moscow; Boris Alexandrovich Sakharov, ulitsa Krzhizhanovskogo, 24/35, korpus 6, kv. 404, Moscow, and Roman Antolievich German, ulitsa Davydkovskaya, 30, kv. 50, Moscow, all of U.S.S.R.

Filed July 2, 1973, Ser. No. 375,862
Int. Cl. D03d *47/26*; D03j *1/12*
U.S. Cl. 139—12 **10 Claims**



The device for winding weft thread on the spools of weft carriers is intended for use in travelling wave looms, wherein the weft carriers are driven by an endless chain conveyor.

In the device, employed as the winding means is a rotatable hollow tube mounted in a rotary plate and carrying a thread guide whose outlet hole is located within the weft carrier at the level of the spool. Rotation of both the hollow tube and the plate, is imparted from the main shaft of the loom. The chain conveyor that moves the weft carriers is driven by U-shaped on the rotary plate. After winding the weft thread on the

spools the hollow tube with the thread guide is stopped in a position, wherein the weft thread is laid into the thread tensioner of the weft carrier, moving towards the shed of the loom, and then into a weft end grip arranged on the plate, whereupon the weft thread is cut off near the thread tensioner. This enables a continuous control of the weft thread position and the cut-off weft end to be reliably gripped.

3,835,894

APPARATUS FOR MOVING THREAD GUIDE DEVICES OF TEXTILE MACHINES

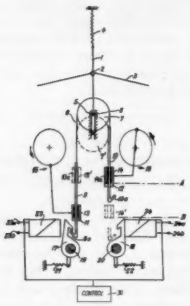
Francisco Speich, Frick, Switzerland, assignor to Jakob Muller, Frick, Germany

Filed Jan. 12, 1973, Ser. No. 323,211

Claims priority, application Switzerland, Jan. 25, 1972, 1095/72

Int. Cl. D03c *13/00, 3/20*

U.S. Cl. 139—55 **7 Claims**



An apparatus for moving thread guide devices of textile machines wherein two traction elements are provided which move to-and-fro in a translatory fashion in opposition to one another between two terminal positions, these traction elements being coupled with one another by a connection element and via the latter acting upon the thread guide devices. A stationary retaining or holding element is associated with each traction element and each such retaining element selectively retains the associated traction element in one terminal position in accordance with a control program.

3,835,895

LOOM JACQUARDS OF THE DOUBLE-LIFT TYPE

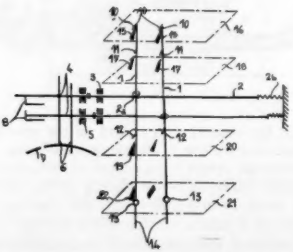
Dario Bassi, Venissieux, France, assignor to Verdol S.A., Caluire (Rhone), France

Filed Mar. 26, 1973, Ser. No. 344,825

Claims priority, application France, Apr. 11, 1972, 72.13495

Int. Cl. D03c *3/06*

U.S. Cl. 139—65 **4 Claims**



In a double-lift jacquard with two superposed movable knife frames and a lower stationary open-shed frame, each of the double hooks comprises a single substantially straight rod-like branch rotatable about its axis; two superposed main beaks each cooperating with one of the movable frames under control of the needle associated with the hook, these main beaks being directed substantially at 90° from each other about the axis of the branch in such manner that when one main beak is caught by a transverse knife of the corresponding movable frame the other main beak is brought by rotation of the hook about the axis of the branch, to an ineffective lateral position at which it cannot be caught by the other movable frame; and a lower open-shed supporting beak adapted to cooperate either with the stationary open-shed frame at the raised position of the hook if same is to remain raised at the next stroke of the loom, or with a transverse bar of a stationary guiding and supporting grid disposed below the open-shed frame, the said open-shed supporting beak being directed along the bissectrix of the main beaks about the axis of the branch in such manner that when it supports the hook the main beaks thereof are at 45° to the knives of the movable frames and may be caught by any of them under control of the needle.

3,835,896

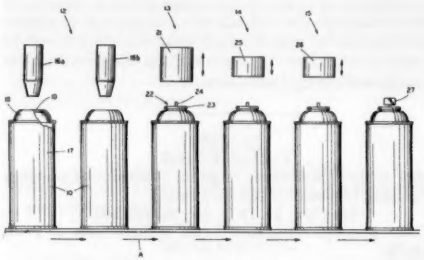
METHOD OF FILLING AEROSOL SPRAY CANS

Thomas J. Smrt, 4N671 Rt. 59, Bartlett, Ill. 60103

Filed Jan. 2, 1973, Ser. No. 320,148

Int. Cl. B65b *1/04, 3/04*

U.S. Cl. 141—3 **9 Claims**



A method of filling aerosol spray cans with paint or other marking material so that the can is able to spray marking material in a well-defined stripe having substantially sharp edges. The can is filled with paint, capped with a valve, and pressurized with aerosol propellant in the conventional manner. The valve is then opened to release some of the propellant but substantially no marking material. The time of opening the valve varies depending on the type of marking material in the can, but the time generally is between about 1 to 60 seconds and usually between about 5 to 25 seconds.

3,835,897

APPARATUS FOR FILLING AND LABELING CONTAINERS

Larry C. Gess, 1255 Fir Dr., Mich. 43612

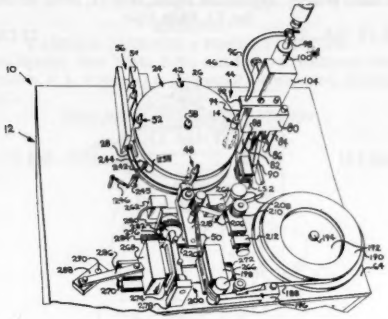
Filed Oct. 18, 1971, Ser. No. 190,210

Int. Cl. B65b *3/12, 43/50;* **B65c** *3/14*

U.S. Cl. 141—98 **12 Claims**

This invention relates to apparatus for filling and labeling medicinal syringes. The apparatus includes a pump arrange-

ment for filling individual syringes automatically and includes a mechanical adjustment for easily changing the amount of medicinal liquid fed to each syringe. The individual syringes are then labeled with appropriate indicia showing the contents. The labels are printed at the same time with the same apparatus to assure that the proper labels are applied to the proper syringes. The labels are fed into the path of the syringes and wrap around the syringe barrels with the free ends of the labels then pressed together behind the syringes.

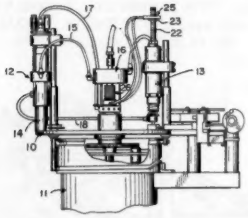


3,835,898

REMOTELY ADJUSTABLE FILLING HEAD

George E. Leonard, Davenport, Iowa, assignor to The Kartridge Pak Co., Davenport, Iowa

Filed Nov. 13, 1972, Ser. No. 306,017
Int. Cl. B65b *43/50*
U.S. Cl. 141—152 12 Claims



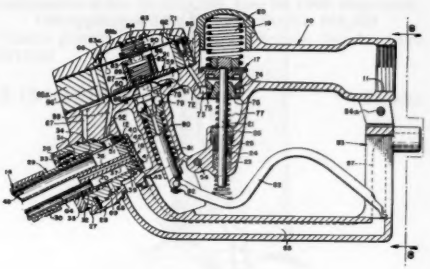
Apparatus for remote adjustment of a filling head on a rotary filling machine to vary the quantity of material to be metered into a container during a filling operation. The apparatus includes a pneumatically operated ratchet nut on the filling head connected through a rotary union on the filling machine to a control panel for generating air signals to incrementally drive the ratchet nut.

3,835,899

LIQUID DISPENSING NOZZLE

Charles A. Holder, Jr., 1434 Castleberry, Cincinnati, Ohio 45223

Continuation of Ser. No. 68,154, Aug. 31, 1970, abandoned.
This application Nov. 13, 1972, Ser. No. 306,051
Int. Cl. B65b *3/18*
U.S. Cl. 141—214 26 Claims



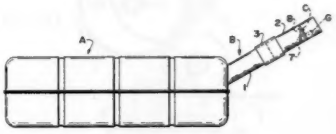
A fuel dispensing nozzle has a sealing member slidably supported on a spout of the nozzle to seal a tank in which the spout is disposed. The nozzle has an arrangement to recover the vapors from the tank being filled. When the vapor pressure in the tank exceeds a predetermined pressure, fuel flow to the tank is stopped. The fuel flow also is stopped when the liquid in the tank exceeds a predetermined level.

3,835,900

NON-LEAK SAFETY VALVE IN FILLING LINE FOR VEHICLE GASOLINE TANK

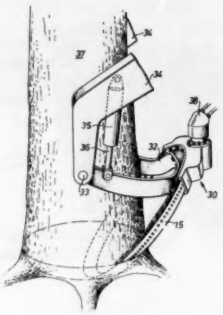
Thomas A. Godbier, 22475 Cameron St., Castro Valley, Calif. 94546

Filed Feb. 27, 1973, Ser. No. 336,252
Int. Cl. B65d *29/02*
U.S. Cl. 141—348 2 Claims



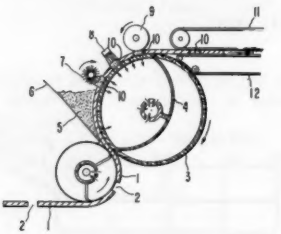
A non-leak safety valve placed in the filling line for a vehicle gasoline tank and comprising a flexible sealing disc that normally extends across the filling line for a vehicle gasoline tank to prevent the escape of gasoline from the tank should the vehicle tip over due to an accident. Novel means is provided for permitting the upper portion of the flexible sealing disc to be bent inwardly by the delivery nozzle of a gasoline pump hose for opening the valve when an operator inserts the end of the nozzle into the tank filling line and presses the nozzle against the flexible sealing disc. Novel means is also provided for guiding the nozzle as it enters the tank filling line so that it will only contact the upper portion of the flexible disc for swinging it inwardly. Spring means returns the disc to closed position when the nozzle is retracted.

3,835,901
TREE FELLING DEVICE
Karl-Erik A. Jonsson, Floraplan 14, 802 28 Gavle, Sweden
Filed Nov. 13, 1973, Ser. No. 415,395
Claims priority, application Sweden, Dec. 11, 1972, 16099/72
Int. Cl. A01g *23/08*
U.S. Cl. 144—34 R **9 Claims**



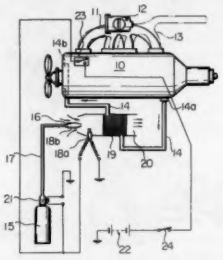
A rotary saw ring formed as an annular segment of a spherical bowl and adapted to be swung around the centre of an imagined sphere, in which said segment ring is included.

3,835,902
METHOD OF COMPOSING WIDE CONTINUOUS BANDS OF VENEER
Armin Elmendorf, Palo Alto, Calif., assignor to Elmendorf Research, Inc., Palo Alto, Calif.
Filed Jan. 26, 1973, Ser. No. 326,627
Int. Cl. B27g *11/00*
U.S. Cl. 144—310 B **13 Claims**



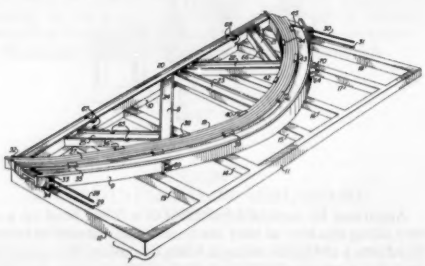
A method of composing veneer strips to form a continuous band in which proximal edges of adjacent pairs of strips may not be parallel. The strips are moved along a predetermined path and are separated to present gaps therebetween. The gaps are filled with a filler comprised of wood particles coated with a binder so that the mass of particles projects outwardly from at least one side of each gap. The particle mass in each gap is compacted under heat and pressure to the same thickness as the adjacent strips so that the filler is bonded to the edges of the strips. A flash of filler is formed on and is bonded to the surface of each adjacent strip at the edge of the strip to increase the connection between the filler and the strip. In a preferred embodiment of the invention, the particle masses are directed into the gaps by suction.

3,835,903
APPARATUS FOR WARMING COOLING AND/OR LUBRICATING MEDIA OF INTERNAL COMBUSTION ENGINES
Kenji Masaki, Yokosuka, and Hiroshi Nishimura, Kawasaki, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan
Filed Apr. 29, 1971, Ser. No. 138,520
Claims priority, application Japan, May 11, 1970, 45-39250
Int. Cl. B60h *3/04*
U.S. Cl. 165—23 **21 Claims**



An apparatus is provided for positively warming a cooling medium and/or lubricating medium for gasoline-powered internal combustion engines of motor vehicles thereby to reduce concentrations of unburned hydrocarbons and carbon-monoxides in the engine exhaust gases emitted when the engine is running cold or being warmed up. The apparatus includes a combustor for combusting a supplied fuel into hot gases and a heat exchanging means which is in contact with portions of the cooling and/or lubricating media. The combustor is controlled by an electric control means which is responsive to a variation in the temperature of the cooling or lubricating medium so that the hot gases are produced therein when the temperature of the medium is lower than a level which is predetermined empirically in consideration of the concentrations of the unburned hydrocarbons and carbon-monoxides which would otherwise be emitted before the temperature of the cooling or lubricating media reaches a satisfactory operating temperature. The fuel to be supplied to the combustor may be a liquefied fuel gas stored in an independent container or a usual fuel supplied from a fuel circuit for the engine.

3,835,904
APPARATUS FOR LAMINATING WOODEN STRIPS
John S. Sumner, 728 N. Sawtelle Ave., Tucson, Ariz. 85716
Filed Apr. 5, 1973, Ser. No. 348,334
Int. Cl. B27g *11/00*; B27h *1/00*
U.S. Cl. 144—313 **16 Claims**



An apparatus for forming laminated beams by pressing freshly glued strips against a rigid frame or elastic beam by an

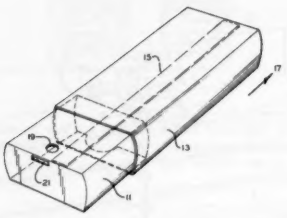
elastic steel beam. The elastic steel beam is provided with a radius of curvature somewhat different from that of the rigid frame so that when the beam is pressed against the laminated strips a bending movement is present over the full length of the beam, which bending movement produces a substantially uniform pressure against the laminated strips. Pressure blocks are provided which are adjustable in position along the length of the laminated strips.

3,835,905

CAMERA CASE FOR A POCKET CAMERA

Harry Spruyt, New York, N.Y., and Louis S. Hoffman, Morristown, N.J., assignors to Colorcraft Corporation, Durham, N.C.

Filed July 6, 1973, Ser. No. 376,939
Int. Cl. A45c *11/38*
U.S. Cl. 150—52 J **10 Claims**



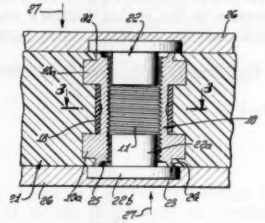
A camera case for a pocket camera is formed of top and bottom vinyl covers with the top part of the cover sized so that it fits snugly on the end of the camera. The top and bottom are attached to each other with an elastic band which is heat sealed into each thereby permitting removal of the bottom portion when it is desired to use the camera.

3,835,906

PLASTIC SLEEVE ENCAPSULATED FASTENER LOCKING INSERT AND ASSEMBLY

Robert W. Dietlein, 2904 Harmony Pl., La Crescenta, Calif. 91214

Filed July 17, 1972, Ser. No. 272,284
Int. Cl. F16b *39/284*
U.S. Cl. 151—21 B **5 Claims**



An insert assembly, for receiving and retaining a screw fastener, is adapted to be mounted by structure closely enveloping the assembly, and comprises:

a. a metallic insert sleeve having an interior thread to receive the fastener thread, the sleeve having a wall portion deformed toward the bore interior so that the sleeve thread develops frictional interference with the fastener thread, and

b. a plastic jacket fitting closely about the sleeve and over the deformed portion so as to provide space therebetween for resilient outward expansion of the deformed wall portion in response to advancing reception of the fastener thread into the sleeve thread and despite close envelopment of the jacket by the retention structure.

3,835,907

PNEUMATIC TIRES

Albert A. Bishton, Birmingham, England, assignor to The Dunlop Company Limited, London, England

Continuation of Ser. No. 837,588, June 30, 1969, abandoned. This application Sept. 29, 1971, Ser. No. 184,928
Claims priority, application Great Britain, July 11, 1968, 33012/68
Int. Cl. B60c *19/06*
U.S. Cl. 152—153 **7 Claims**

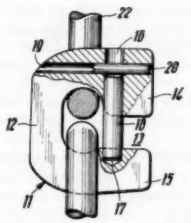
A tubeless tire, especially for an aircraft provided with venting means in the sidewall and/or bead regions comprising one or more substantially continuous circumferential grooves of a depth so as to leave only a thin layer of thickness 1mm, or less of rubber externally of the reinforcing cords of the tire, each groove being provided with a plurality of penetrations each of a depth of about 2–3 cords.

3,835,908

LINK ELEMENT FOR CHAINS

Hansjorg Rieger, Langerstrasse 90, 708 Aalen, Wurttemberg, and Erhard Alfred Weidler, Jahnstrasse 32, 7084 Unterkochen/Wurttemberg, Germany

Filed Feb. 13, 1973, Ser. No. 332,070
Claims priority, application Germany, Feb. 18, 1972, 2208509
Int. Cl. B60c *27/06*
U.S. Cl. 152—243 **4 Claims**

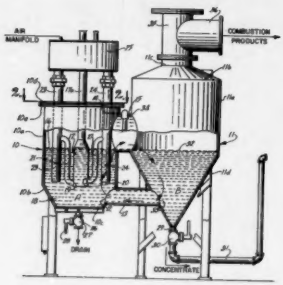


The invention relates to a link element for chains, in particular tire chains, consisting of an open substantially C-shaped body member, of which the sections, defining an insert slot for the joining elements of chain strands to be coupled together, form aligned openings for receiving a locking element for bridging the insert slot.

3,835,909
METHODS AND APPARATUS FOR SUBMERGED COMBUSTION (WITH AIR POLLUTION CONTROL)

Clarence J. Douglas; Walter L. Young, and Jack H. Phillips, all of Tulsa, Okla., assignors to Ozark-Mahoning Company, Tulsa, Okla.

Filed May 15, 1972, Ser. No. 253,541
Int. Cl. B01d *1/14;* **F24h** *1/20;* **B01d** *1/00;* **F02m** *25/10;* **B01d** *47/02*
U.S. Cl. 159—16 A **9 Claims**



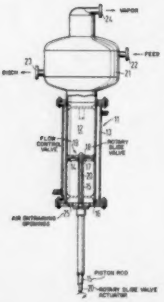
Improvements in submerged combustion evaporators and heaters particularly adapted to the heating and evaporation of various heat sensitive solutions, including both methods and apparatus therefor;

Improved apparatus and methods for the discharge of products of combustion from the combustion chamber of a submerged burner into and through the body of a heat-sensitive solution, said discharge handled in such manner as to reduce air pollution resulting from the practice of the submerged combustion process with respect to the given solution, as well as improve the effectiveness of the burner, per se, and the submerged combustion process.

3,835,910
LIQUID EVAPORATOR AND OPERATION PROCESS THEREFOR

Helmut Westphal, Offenbach am Main, Germany, assignor to Georg Westphal Ing. KG, Offenbach am Main, Germany

Filed Dec. 14, 1972, Ser. No. 314,924
Claims priority, application Germany, Dec. 17, 1971, 2162838
Int. Cl. C10b *43/00;* **B01b; B01d** *1/100, 11/00*
U.S. Cl. 159—23 **2 Claims**



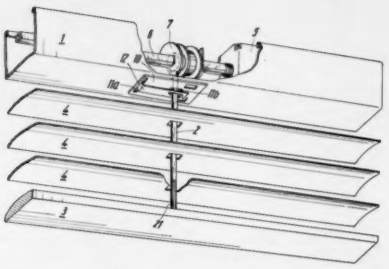
Known liquid evaporator vessels are provided with removing means for removing depositions from the inner sides of the walls of the vessel. The removing means do not directly contact the walls so that they can only delay the formation of depositions on the walls.

It is the object of this invention to provide improved removing means for removing solid depositions from the inner sides of the walls of the evaporator vessel.

3,835,911
ELECTRICALLY OPERABLE DRIVE ARRANGEMENT FOR VENETIAN BLINDS

Wilfried Horst, Oldenburg; Heiko Coldewey, Jeddeloh; Mario Ammazzalorso, Wardenburg, and Emil Schuppler, Oldenburg, all of Germany, assignors to Firma Justin Huppe, Oldenburg, Germany

Filed Dec. 4, 1972, Ser. No. 311,762
Claims priority, application Germany, Jan. 13, 1972, 7201069[U]
Int. Cl. E06b *9/30*
U.S. Cl. 160—168 **7 Claims**

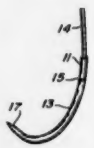


The invention relates to an electrically operable drive arrangement for venetian blinds with at least one draw tape which tape is wound up or down by a motor located in the header. Switches in the header are operated by a feeler which moves respectively perpendicular to or parallel to the tape as the tape moves from its normal tangential position on the take-up roller upon bottoming of the blind, or when the blind reaches fully raised position.

3,835,912
METHOD OF JOINING A FILAMENT TO A METAL ROD

Paul A. Kristensen, St. James, and William F. Simon, Duluth, both of Minn., assignors to S.K.S. Limited, Barbados, British W. Indies

Filed June 25, 1973, Ser. No. 373,399
Int. Cl. B21g *3/18*
U.S. Cl. 163—5 **12 Claims**



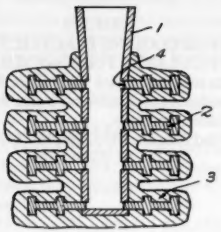
A metal tube is butted against a metal rod. The rod and tube are welded together using a laser energy source. A filament is inserted into the tube and secured therein. The rod may then be sharpened to serve as a needle.

3,835,913

INVESTMENT CASTING

William Jacob Vandemark, Strongville, and Michael Stuart Wood, Olmsted Falls, both of Ohio, assignors to Foseco International Limited, Birmingham, England

Filed Apr. 21, 1972, Ser. No. 246,204
Claims priority, application Great Britain, Apr. 22, 1971, 10859/71
Int. Cl. B22c 9/02
U.S. Cl. 164—35 1 Claim



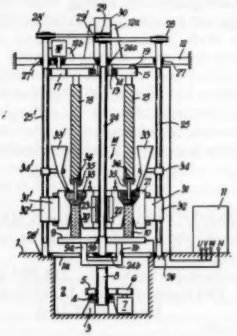
In investment casting part or all of the usual central wax sump and feeder is replaced by a refractory sleeve of heat-insulating or exothermic material, into which one or more wax patterns are fitted.

3,835,914

PROCESS FOR PRODUCING METALLIC ARTICLES BY ELECTROSLAG REMELTING

Akira Ujiie, Kobe, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 12, 1973, Ser. No. 331,707
Claims priority, application Japan, Mar. 1, 1972, 47-20563
Int. Cl. B22d 27/02
U.S. Cl. 164—52 4 Claims



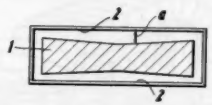
A method of forming a bath of molten slage for use in the production of metallic articles by an electroslag melting process which method comprises connecting non-consumable electrodes to the lower ends of metallic electrodes to be melted in the electroslag melting process, filling a mould to be used in the electroslag melting process with flux so that the lower ends, at least, of the non-consumable electrodes, are below the level of the flux and passing an electric current between adjacent ones of the non-consumable electrodes, whereby the flux is melted to form the bath of molten slag. Then, the non-consumable electrodes are disconnected from the metallic electrodes and the latter have their lower ends dipped into the molten slag pool and begin to become consumed.

3,835,915

ARRANGEMENT FOR USE IN MAKING SLAB INGOTS BY ELECTRIC SLAG-REFINING

Wolfgang W. Holzgruber, Kapfenberg; Peter J. V. Machner, Leoben, and Ludwig Schwarz, Kapfenberg, all of Austria, assignors to Gebr. Bohler & Co. AG., Vienna, Kapfenberg, Austria

Filed Apr. 26, 1972, Ser. No. 247,576
Claims priority, application Germany, Aug. 30, 1971, 2143302
Int. Cl. B22d 27/02
U.S. Cl. 164—252 11 Claims



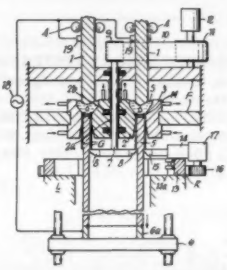
The arrangement comprises an ingot mold having inside surfaces which define an elongated horizontal cross-section. The horizontal cross-section has a pair of long sides each of which has a central portion and outer portions. Fusible electrode means extend in said ingot mold and are horizontally spaced from said inside surfaces at said central portions by a larger distance than at said outer portions.

3,835,916

APPARATUS FOR ELECTROSLAG REMELTING TO PRODUCE TUBULAR BODIES

Akira Ujiie, Kobe, Japan, assignor to Mitsubishi Jukogyo Kabushik Kaisha, Tokyo, Japan

Filed Jan. 5, 1973, Ser. No. 321,305
Claims priority, application Japan, Jan. 17, 1972, 47-6215
Int. Cl. B22d 27/02
U.S. Cl. 164—252 7 Claims



The invention relates to apparatus suitable for use in the production of metallic tubes in which slag, scale and irregularities on the inner and outer walls of the metallic tube are removed immediately after the metallic tube is formed. The apparatus comprises the following features:

1. a mould which comprises a core mould and an outer mould, the core mould and the outer mould being situated to delimit an annular space therebetween;

2. means for continuously feeding a plurality of metal electrodes into the annular space;

3. means for supplying an electric current to the metal electrodes to melt the electrodes and form a bath of molten metal in the annular space;

4. drawing means for continuously drawing from the mould a metallic tube as it is formed on cooling of the molten metal in the mould; and

5. cutting means for removing slag, scale and irregularities on the inner andpreferably also the outer wall of the mecallic tube immediately after the metallic tube is withdrawn from the mould by the drawing means.

3,835,917

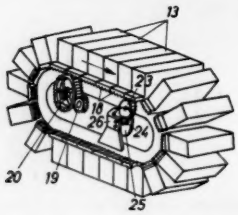
CONTINUOUS CASTING OF NON-FERROUS METALS

Ivan Gyongyos, Montana, Switzerland, assignor to Prolizenz AG, Chur, Switzerland

Continuation of Ser. No. 309,800, Nov. 27, 1972, abandoned. This application Mar. 1, 1974, Ser. No. 447,151

Int. Cl. B22d *11/06*

U.S. Cl. 164—279 **4 Claims**



A continuous casting machine is disclosed of the kind having a mold formed by a cooperating pair of endless sets of articulated mold blocks which are driven at the same speed so that over an advancing portion of their run they engage with each other and define between them a moving mold cavitiy. The advancing portion of the run of the blocks is straight and inclined to the horizontal at 45° or less. The blocks of the lower set move downwards as they leave the advancing portion of the run, and to prevent their weight from pulling apart the blocks occupying the advancing portion of the run, a brake is provided at the downstream end of the advancing portion of the run. The action of the brake opposes the pull exerted by the weight of the blocks leaving the advancing portion.

3,835,918

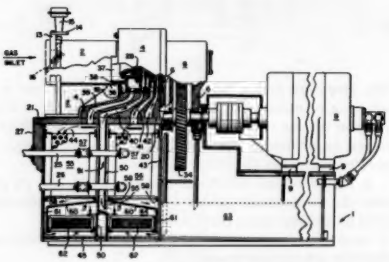
COMPRESSOR BASE AND INTERCOOLERS

Karol Pilarczyk, Loudonville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 44,034, June 8, 1970, Pat. No. 3,644,054. This application Nov. 29, 1971, Ser. No. 202,981

Int. Cl. F04d *29/58;* **F04c** *29/04;* **F04d** *17/08*

U.S. Cl. 165—47 **5 Claims**



A base containing a pair of identical heat exchangers, demisters and separators has rigidly mounted thereon a cast multi-stage compressor casing provided with integral air inlet and discharge passages in direct communication with corresponding passages in the top wall of the base for providing the intercooling between stages. Fluid passes through the intercoolers by moving downwardly through the heat exchangers, downwardly through restricted nozzles and reversely upwardly for separating condensation, upwardly through the demisters and through central partition walls forming central manifold chambers. The liquid connections for the intercoolers may be uncoupled at one end for sliding the intercoolers off shelves from the opposite end. A telescopic resilient coupling between the casing inlet to the rotor and an inlet housing rigidly coupled to a fluid supply will prevent transmission of forces therebetween. The base further mounts the drive structure for the compressor and carries an oil sump below the drive structure.

3,835,919

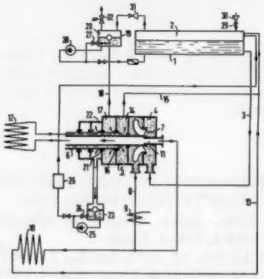
DEVICE FOR COOLING ELECTRIC MACHINES, PARTICULARLY TURBOGENERATORS

Dietrich Lambrecht, and Erich Weghaupt, both of Mulheim, Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

Filed Feb. 20, 1973, Ser. No. 333,703

Int. Cl. F24h *3/00*

U.S. Cl. 165—47 **5 Claims**



To cool turbogenerators having water-cooled stator and rotor windings and a cooling-water connecting head at the end of the rotor shaft, an intermediate tank containing a gas cushion maintained at a pressure slightly higher than atmospheric is interposed between a main water tank that is at elevated pressure and a water chamber that is at reduced pressure and is located adjacent a cooling-water discharge chamber. Water accumulating in the intermediate tank is fed back to the main water tank by a booster pump.

3,835,920

COMPACT FLUID HEAT EXCHANGER

James R. Mondt, Pontiac, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 228,207, Feb. 22, 1972, abandoned. This application July 27, 1972, Ser. No. 275,715

Int. Cl. F28f *7/00*

U.S. Cl. 165—81 **2 Claims**

A tubular type heat exchanger having two vertical header tanks with one of the header tanks having fluid inlet and outlet fittings on opposite ends. A partition separates the interior of

this header tank into an inlet portion and an outlet portion. U-shaped tubes extend in a horizontal direction between the tanks, passing fluid from the inlet portion of the first tank to the interior of the second header tank and then back to the outlet portion of the first tank. Individual rectangular fins are brazed to the tubes in planar relation for spacing the tubes horizontally and vertically. The edges of the rectangular collar members are separated a predetermined distance from corresponding edges of adjacent collar members for preventing binding engagement therebetween when the collars thermally expand in response to exposure of fluid having a temperature of about 2,500°F. Vertical retention rods which extend adjacent the tubes have pins engaging the underside of the tubes for supporting the tubes vertically while simultaneously preventing distortion of the tubes in a horizontal direction normal to the tube's axis.

3,835,921

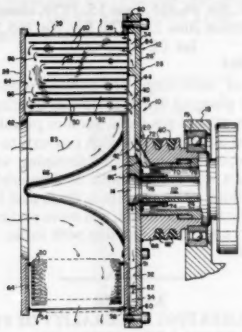
ROTATABLE HEAT EXCHANGER

George N. Faris, New York, N.Y., and Nicholas Howard Des Champs, Whippany, N.J., assignors to Donbar Development Corporation, New York, N.Y.

Filed Feb. 1, 1973, Ser. No. 328,686

Int. Cl. F28d *11/00*; **F28g** *5/00*

U.S. Cl. 165—86 **7 Claims**



A rotary heat exchanger including a plurality of hollow blades fixed to the periphery of a rotatably mounted member oriented to serve as means for providing forced circulation of ambient air in a radial direction upon rotation. Passages are formed in the rotatable member which receive the preheated or precooled thermal fluid from external equipment and distribute such fluid to the hollow blades within which the fluid circulates causing heat transfer to ambient fluid. The thermal fluid is then directed to collection passages in the rotatable member from which the fluid exits and returns to the external equipment. In one embodiment, the distribution and collection passages are formed to obtain a reduced pressure drop and a compact device. In another embodiment, a stator is provided enabling the heat exchanger to function as a pump for circulating the thermal fluid.

3,835,922

HEAT EXCHANGER FOR FLUENT MASSES

Rudolf Raths, Kilchberg, Switzerland, assignor to Chocolade fabriken Lindt & Sprungli Aktiengesellschaft, Kilchberg, Switzerland

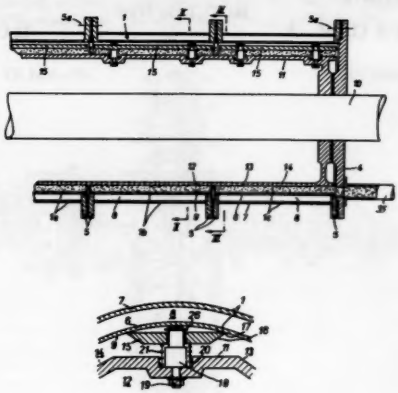
Filed Mar. 21, 1973, Ser. No. 343,406

Claims priority, application Germany, Mar. 30, 1972, 2215536

Int. Cl. F28f *17/00*; **F28g** *3/12*

U.S. Cl. 165—94 **9 Claims**

A heat exchanger for flowable or fluent masses or media, comprising a hollow cylinder surrounded by a cooling or heating jacket, and a rotor coaxially arranged with respect to the hollow cylinder, rotatable relative thereto, and bounding together with the hollow cylinder a gap. The rotor carries scraper or stripper elements cooperating with the heat exchange surface of the hollow cylinder at the gap, these scraper elements serving to prevent the deposition of particles



of the media at the surface. The scraper elements are constructed as plates arranged parallel to tangential planes of the rotor, these plates being radially displaceably guided at the rotor. The plates can be pressed by elastic means against the heat exchange surface of the hollow cylinder so that they bear thereagainst by means of two parallel lengthwise extending edges.

3,835,923

HEAT EXCHANGER FOR FLUID MEDIA HAVING UNEQUAL SURFACE CONDUCTANCES

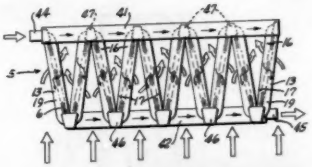
Ove Bertil Platell, Sigtuna, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden

Filed Sept. 10, 1973, Ser. No. 395,923

Claims priority, application Sweden, Sept. 13, 1972, 11835/72

Int. Cl. F28f *1/42*

U.S. Cl. 165—179 **5 Claims**



A heat exchanger module comprises thin heat transfer element strips, arranged in a row, parallel to one another, with their surfaces in opposing spaced apart relationship. Opposing spaced apart wall elements bridge adjacent strips, well inwardly of their ends, to cooperate with the strips in defining a row of short, laterally adjacent flow passages. Elongated inlet and outlet manifolds, each extending along the whole row of flow passages, cause internal fluid to flow through all of the flow passages in parallel. Portions of the strips outward of the wall elements comprise fins across which external fluid flows. Both fluids flow parallel to strip surfaces, hence pressure drops are low.

3,835,924

MARINE RISER ORIENTATION DEVICE

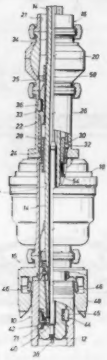
James C. Albers; Gerald E. Pfenning, both of New Orleans, La., and Adrian P. Anderson, The Hague, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Jan. 10, 1973, Ser. No. 322,596

Claims priority, application Great Britain, Jan. 10, 1972, 1112/72

Int. Cl. E21c *19/00*

U.S. Cl. 166—.5 **11 Claims**



A marine riser orientation device enables equipment to be landed on an underwater wellhead without the use of guidelines by providing a sleeve slidably mounted on a tubular orienting member, said sleeve having means to achieve the desired angular position with said tubular member and means to orient the sleeve with respect to the riser. Third means are provided on the tubular orienting member to achieve the desired angular relationship with respect to the underwater wellhead.

3,835,925

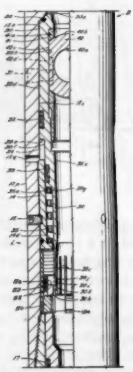
SURFACE CONTROLLED FLOAT VALVE AND INSIDE BLOWOUT PREVENTER DRILLING TOOL

James D. Mott, Houston, Tex., assignor to Hydril Company, Houston, Tex.

Filed May 14, 1973, Ser. No. 359,685

Int. Cl. E21b *43/12*

U.S. Cl. 166—73 **18 Claims**



A full bore opening rotatable ball valve inside blow-out preventer well tool adapted for connection in a well conduit to automatically control undesired flow in the bore therethrough and including a releasable locking means for holding the ball valve in open position when running the tool into the well bore and which is released by a predetermined manipulation of the drilling string to enable the well pressure responsive operation of the ball valve.

3,835,926

METHODS FOR SEALING SUBTERRANEAN EARTH FORMATIONS

Clarence C. Clement, Jr., Odessa, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Aug. 13, 1973, Ser. No. 387,881

Int. Cl. E21b *33/138*

U.S. Cl. 166—292 **11 Claims**

This invention relates to cement compositions having thixotropic properties and to squeeze cementing methods of sealing subterranean earth formations using such compositions.

3,835,927

PROCESS OF REMOVING SULFUR FROM FLUIDS

Bernardus A. Oude Alink; Robert R. Annand, and Derek Redmore, all of St. Louis, Mo., assignors to Petrolite Corporation, Wilmington, Del.

Division of Ser. No. 46,465, June 15, 1970, abandoned. This application June 22, 1972, Ser. No. 265,242

Int. Cl. E21b *43/00*

U.S. Cl. 166—304 **12 Claims**

A method of inhibiting, preventing, reducing, and/or reversing sulfur plugging which comprises treating sulfur-containing fluids in oil and gas wells, such as petroleum (and/or fluids containing a component which converts to sulfur), with a reactant compound capable of combining with sulfur to produce products which are soluble or dispersible in the sulfur-containing fluids. This process is illustrated by the use of olefins as the reactive compound, and more particularly by the use of an olefin capable of reacting with sulfur to form 1,2-dithiole-3-thiones.

3,835,928

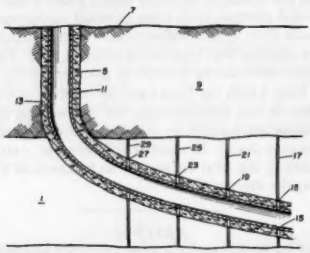
METHOD OF CREATING A PLURALITY OF FRACTURES FROM A DEVIATED WELL

Malcolm K. Strubhar, Irving, and Edwin E. Glenn, Jr., Dallas, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 20, 1973, Ser. No. 389,853

Int. Cl. E21b *43/26, 43/27*

U.S. Cl. 166—308 **5 Claims**



This specification discloses a method of forming from a deviated well a plurality of vertically disposed fractures spaced a substantial distance apart in a subterranean formation having a known preferred fracture orientation. A deviated well is provided which extends from the surface of the earth and penetrates the subterranean formation at an angle of at least 10° measured from the vertical. The well is oriented such that it penetrates the subterranean formation in a direction transversely of the preferred fracture orientation.

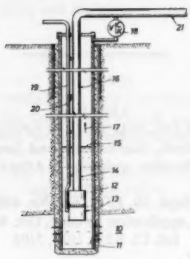
A first fracture initiation point is formed to establish fluid communication between the interior of the well and the subterranean formation. Hydraulic pressure is applied through the first fracture initiation point to the subterranean formation to form and propagate a first vertically disposed fracture into the formation in the direction of the preferred fracture orientation. Thereafter, a second fracture initiation point is formed at a predetermined horizontal distance from the first fracture initiation point. The second fracture initiation point is isolated from fluid communication with the first fracture initiation point and hydraulic pressure is applied through the second point to the subterranean formation to form and propagate a second vertically disposed fracture into the formation in the direction of the preferred fracture orientation. This procedure may be repeated as desired to form from the deviated well other vertically disposed fractures which extend into the formation in the direction of the preferred fracture orientation.

3,835,929

METHOD AND APPARATUS FOR PROTECTING ELECTRICAL CABLE FOR DOWNHOLE ELECTRICAL PUMP SERVICE

George O. Suman, Jr., Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 17, 1972, Ser. No. 281,575
Int. Cl. E21b *43/00, 33/03*
U.S. Cl. 166—315 **2 Claims**



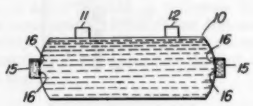
Leak proof protection is provided for electrical cable used in supplying power to electrically driven pumps installed in subterranean wells by inserting the cable into length(s) of coiled tubing and including seal means at the lower end.

3,835,930

STORAGE AND TRANSPORT SYSTEM

Edward P. Denigan, Jr., Hopewell, and Donnell A. Ballard, Princeton, both of N.J., assignors to Oxirane Corporation, Princeton, N.J.

Filed May 30, 1973, Ser. No. 365,136
Int. Cl. A62c *35/54*
U.S. Cl. 169—66 **18 Claims**



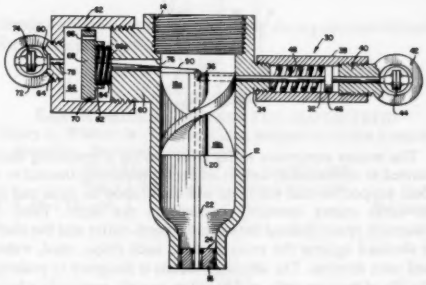
System for reducing hazards in storing and transporting hazardous material. Container for material includes a chamber containing a phlegmatizer for the material. Chamber has a seal melting, rupturing or releasing at a temperature substantially below the self-accelerating decomposition temperature of the hazardous material, to release the phlegmatizer into the material.

3,835,931

DISCHARGE HEAD AND FIRE PROTECTION SYSTEM UTILIZING SAME WHEREBY THE HEAD IS ACTUATABLE IN RESPONSE TO TWO SEPARATE TEMPERATURES

William L. Livingston, 283 Norwood St., Sharon, Mass. 02067

Continuation-in-part of Ser. No. 256,820, May 25, 1972, abandoned, which is a continuation of Ser. No. 160,715, July 8, 1971, abandoned. This application Nov. 2, 1973, Ser. No. 412,417
Int. Cl. A62c *37/08*
U.S. Cl. 169—70 **39 Claims**



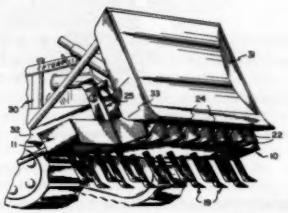
A discharge head for use in a fire protection system wherein the head is normally closed and a fire responsive device is adapted to open same in response to a first predetermined fire condition. A second fire responsive device opens the head in response to a second predetermined fire condition and a control selectively controls the operation of the first and second fire responsive devices.

3,835,932

SCARIFIER-PULVERIZER

Donald R. Mitchell, 1937 W. 24th St., Apt. 6B, Emporia, Kans. 66801

Filed Oct. 27, 1972, Ser. No. 301,412
Int. Cl. A01b *49/02*
U.S. Cl. 172—197 **4 Claims**



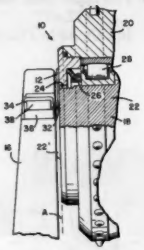
A scarifying and pulverizing implement for mounting on earth-working equipment in which such implement has a plurality of adjustably mounted ripper teeth for penetrating the soil, an inclined front face for rolling and crushing the uplifted soil, and a plurality of spaced plates extending forwardly from the inclined face prohibiting extensive lateral displacement of the pulverized soil.

3,835,933

SHIELDING MEANS

William D. Coski, Mercer Island, Wash., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed June 27, 1973, Ser. No. 374,109
Int. Cl. A01b 33/12; F16c 33/76
U.S. Cl. 172—518 15 Claims



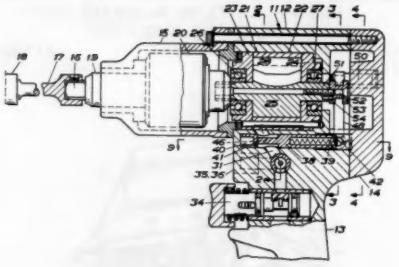
The means comprises a flat plate having a mounting limb carried at substantially a right angle, for mounting thereof to a shaft support so that the plate will close upon an axial end of an earth cutter rotatably carried on the shaft. Thus, a clearance space defined between the earth cutter and the shaft is shielded against the entry of dust, rock chips, mud, water and such detritus. The shielding means is designed to prolong the life of bearing seals, and bearings as well, especially where such are in earth cutter use.

3,835,934

IMPACT WRENCH WITH AUTOMATIC SHUT-OFF

Knut Christian Schoeps, Nacka, and Tommy Henning Bruno Gustavsson, Skarholmen, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Feb. 1, 1973, Ser. No. 328,679
Claims priority, application Sweden, Feb. 4, 1972, 1300/72
Int. Cl. B25b 23/14
U.S. Cl. 173—12 16 Claims



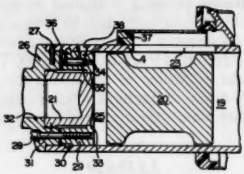
In an impact wrench, the rotor of a pneumatic sliding vane motor and the hammer are inter-connected to rotate conjointly. On the rear stub shaft of the rotor there is formed an inner race for a ball. A pivot-mounted arm forms an outer race for the ball, and the races diverge in the direction of the rotary impacts so that, at its rolling movement created by the rebound of the hammer, the ball forces the arm to swing. At a pre-determined magnitude of the rebound, the arm forces a trigger for a shut-off valve to release the shut-off valve for movement into its position for shutting off the supply of motive fluid, and the motor stops.

3,835,935

IDLING SYSTEM FOR POWER HAMMER

Daniel Harrison Sides, New Freedom, Pa., and Robert Gordon Moores, Jr., Cockeysville, Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed Mar. 19, 1973, Ser. No. 342,865
Int. Cl. B25d 9/08, 11/04
U.S. Cl. 173—14 11 Claims



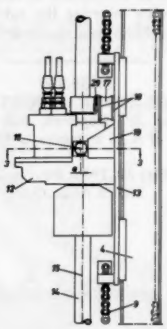
An electric paving breaker is described which includes an electric motor, a crank and piston driven by the motor, and a ram driven by the piston which delivers energy to a tool bit to produce a hammering output. An improved idling system to prevent the piston from driving the ram unless a tool bit is in place is described.

3,835,936

DRILLING MACHINE SUSPENSION

John Arne Lagerstedt, Skarholmen, and Jan Edvard Persson, Nacka, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Sept. 26, 1973, Ser. No. 400,825
Claims priority, application Sweden, Oct. 6, 1972, 12988/72
Int. Cl. E21c 1/00, 5/06
U.S. Cl. 173—162 3 Claims



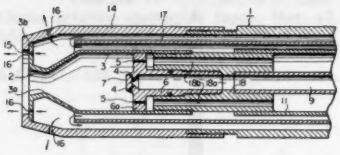
A drilling machine is mounted on a slide which is movable along a feed beam. The drilling machine is connected to the slide by means of a hinge which is situated farther from the feed beam than the drill axis defined by the drilling machine. Furthermore an elastic element has been provided between the drilling machine and the slide, the stiffness of the elastic element being such that the direction of the drill axis is independent of the applied feed force.

3,835,937

DRILLING AND CUTTING SUBMARINE ROCKS

Zenjiro Hokao, Tokorozawa; Teijiro Shibata, and Siro Yasukabe, both of Tokyo, all of Japan, assignors to Tobishima Kensetsu Kabushiki Kaisha, Tokyo, Japan

Filed May 9, 1973, Ser. No. 358,812
Int. Cl. E21b 7/14
U.S. Cl. 175—6 1 Claim



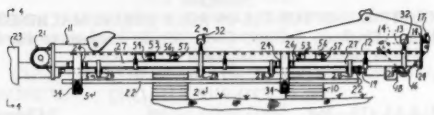
A flame jet produced by the combustion of a kerosene-oxygen mixture in a combustion chamber is projected against an underwater rock thereby to drill or cut the rock by spalling or melting. The flame jet is projected at a pressure of at least 10 atmospheres higher than the water pressure at the rock being drilled or cut. Cooling water is supplied to cool the combustion chamber walls and the parts of the rock in the vicinity of the flame jet.

3,835,938

DRILLING APPARATUS

David L. Moody, Oneonta, and James B. Loftis, Remlap, both of Ala., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed May 17, 1973, Ser. No. 361,019
Int. Cl. E21b 19/14
U.S. Cl. 175—52 7 Claims



A carriage movable by a power unit along a track carrying a drive shaft connected sequentially to a plurality of drill rods. The drill rods are supplied by spaced apart transversely movable rack assemblies having upwardly opening spaced recesses therein. Transverse, spaced apart support arms are mounted for pivotal movement in vertical planes about a common axis selectively to an upper position in alignment with the drive shaft and to a lower position beneath the drill rods carried by the rack assembly. The rack assemblies are moved to position drill rods sequentially in alignment with the path of movement of the support arms.

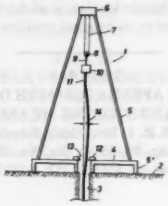
3,835,939

WELL DRILLING

Robert H. McEntire, Plano, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Sept. 18, 1972, Ser. No. 289,830
Int. Cl. E21b 17/10
U.S. Cl. 175—65 8 Claims

A method and apparatus for physically restraining a drill string at various points above the earth's surface and below the apparatus for rotating the drill string to prevent substantial



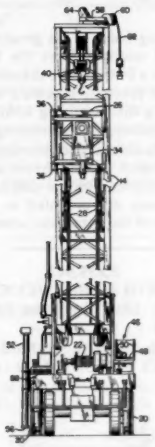
lateral displacement of the drill string during rotation thereof for drilling purposes.

3,835,940

EARTH DRILLING APPARATUS AND METHOD

Henry A. Winter, Jr., Denver, Colo., assignor to Smith International Inc., Newport Beach, Calif.

Filed Mar. 23, 1973, Ser. No. 344,357
Int. Cl. E21b 19/14, 3/00; E21c 1/00
U.S. Cl. 175—85 9 Claims



Earth drilling apparatus of the generally conventional type comprising a wheel supported vehicle having a pivoted derrick or mast which is moveable between a substantially horizontal transport position above the vehicle and a substantially vertical drilling position adjacent the rear end of the vehicle, the mast having a rectilinearly moveable carriage supporting a drilling head. It is characterized by a longitudinal drill pipe storage compartment adjacent one side of the vehicle, a pivoted boom at the top of the mast for transferring a drill pipe from the storage compartment to a temporary vertical holding position, the drilling head being pivotally mounted to its carriage for movement above the upper end of the holding position at which the pipe is connected to the drilling head, the drilling head and its attached pipe then being moveable to drilling position, this procedure continuing until the drilling reaches a desired depth. In the removal of the pipe string, the drilling head is moved to an inoperative clearing position laterally of the drill pipe axis and a traveling hoist block, moveable along such axis, is attached to the uppermost pipe of the string. The string is then elevated one pipe increment, the

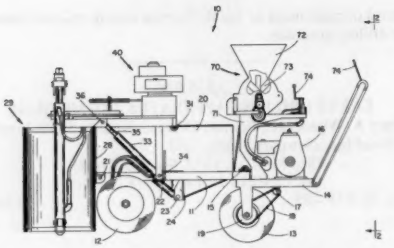
uppermost pipe disconnected from the string therebelow, and the hoist block lowered. At or near the commencement of lowering, the lower end of the disconnected pipe is manually guided into the rear end of the storage compartment and as the traveling hoist block lowers, it slides forwardly into the storage compartment to its original position therein.

3,835,941

HOLE DRILLING APPARATUS WITH DIRT RECEIVING AND STORING MEANS

Junior Keith King, R.R. 1, Box 106A, Russiaville, Ind. 46979

Filed Aug. 20, 1973, Ser. No. 389,864
Int. Cl. E21b *3/02, 41/00*
U.S. Cl. 175—88 **7 Claims**



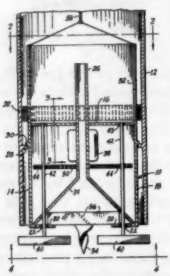
A device for digging holes in the ground and for receiving and storing the dirt removed from the holes. An auger is rotatably mounted to a frame and is drivable downwardly into the ground. A bin is pivotally mounted to the frame and is positioned adjacent a dirt receiving holder surrounding the auger. Means are provided for conveying the dirt from the holder to the bin. Means are also provided for emptying the dirt from the bin. Branch cutting means are mounted to the frame for cutting branches with the cuttings then falling into the bin. Driving means are mounted to the frame for the horizontal movement of the apparatus across the ground.

3,835,942

EARTH BORING DEVICE

Samuel S. Leonardi, 1245 Northwest 7th Ter., Fort Lauderdale, Fla. 33311

Filed Mar. 30, 1973, Ser. No. 346,714
Int. Cl. E21b *3/10;* **E21c** *1/00*
U.S. Cl. 175—96 **20 Claims**



Earth boring device for sinking a well casing in which a housing rotates within the well casing, the housing carrying circumferentially spaced, diametrically disposed, cutters which excavate an annular bore below the well casing. The cutters are capable of being moved to a position radially inward of the well casing, permitting the raising of the housing from the bottom of the excavated well within the well casing.

3,835,943

DRILLING APPARATUS AND ADAPTOR ASSEMBLY FOR SUCH APPARATUS

Richard Nicholas Bray, Farthings, Restwell Ave., Cranleigh, England

Filed Feb. 22, 1973, Ser. No. 334,609
Claims priority, application Great Britain, Feb. 25, 1972, 8846/72
Int. Cl. E21b *5/00*
U.S. Cl. 175—173 **8 Claims**

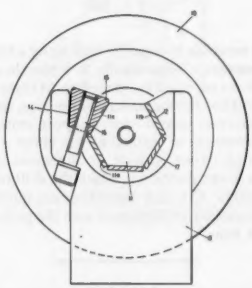
The invention relates to drilling apparatus having an inner drill string and a surrounding outer drill string, which strings can be advanced simultaneously. Instead of these strings being rigidly coupled for simultaneous advance under a rotary percussive action, the inner drill string is connected to a first adaptor which is slidable but non-rotatable in a second adaptor to which the outer drill string is connected so that when the first adaptor is rotatively and percussively driven, the second adaptor and its associated outer drill string are rotatively driven. Percussion is preferably transmitted to the bit of the outer drill string by arranging the bit of the inner string to strike the outer bit, but alternatively or additionally the first adaptor may hammer the second adaptor.

3,835,944

CUTTING UNIT FOR USE ON ROCK BORING MACHINES

Henry Bingham, Springs, South Africa, assignor to Hard Metals Limited, Transvaal, South Africa

Filed June 12, 1973, Ser. No. 365,793
Int. Cl. E21b *9/12;* **E21c** *13/12*
U.S. Cl. 175—364 **3 Claims**



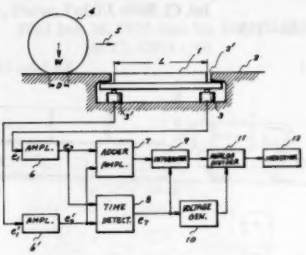
A rock-boring machine of the type comprising rotatable headplate having a plurality of cutting units mounted on the front face of the headplate. Each cutting unit includes a cutter journalled for rotation on a shaft. The ends of the shaft are hexagonal in cross-section and are supported in complementally-slotted saddles to prevent rotation of the shaft in the sad-

dles. The shaft is locked in the saddles by means of a single locking member at each end of the shaft. Each locking member is secured to a saddle and is adapted to bear against one of the surfaces of the hexagonal ends of the shaft.

3,835,945
DEVICE FOR WEIGHING RUNNING VEHICLE

Masami Yamanaka, Miki, and Yasutoshi Masuda, Ashiya, both of Japan, assignors to Yamato Scale Company, Limited, Hyogo-ken, Japan

Filed Jan. 14, 1974, Ser. No. 433,261
Claims priority, application Japan, Mar. 12, 1973, 48-28655
Int. Cl. G01g *19/02*
U.S. Cl. 177—134 **4 Claims**

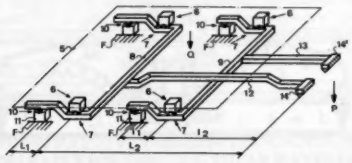


A device for measuring the weight of a moving vehicle by measuring either the wheel load or axle load and avoiding inaccuracies due to vibration through the use of means for producing two signals proportioned to the downward force on the near and far edges of a platform as the wheel or wheels pass over it and then averaging the weight for a period initiated when the ratio of said signals has a first value and terminating when the ratio of said signals has a second value.

3,835,946
PLATFORM SCALE

Erhard Mettler, Zollikon, Switzerland, assignor to Mettler Instruments AG, Greifensee, Switzerland

Filed Sept. 4, 1973, Ser. No. 394,085
Claims priority, application Switzerland, Sept. 29, 1972, 14290/72
Int. Cl. G01q *21/08*
U.S. Cl. 177—256 **9 Claims**

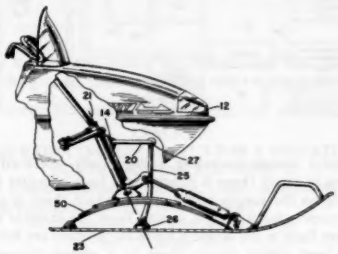


Weighing apparatus of the platform scale type, characterized by the provision of load lever means including a pair of parallel load levers of unequal lengths for transmitting the vertical movement of the platform to weighing means mounted on one side thereof. Each load lever is connected at a first end with the frame of the apparatus, the other ends of the levers being connected with the weighing means. The load force of the platform is applied to an intermediate point on each of the levers adjacent their first ends, the ratio of the distance between said intermediate point and said first lever end to the distance between the intermediate point and the other lever end being the same for each lever. Preferably the said other ends of the load levers are connected with the weighing means by means including a pair of knife edges having a common horizontal line normal to the lever axes, the first ends of the levers extending under the platform means.

3,835,947
TORSION BAR STABILIZING SYSTEM FOR SNOWMOBILES

Charles F. Alexander, Jr., Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Nov. 27, 1973, Ser. No. 419,345
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R **7 Claims**

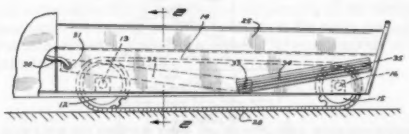


An anti-roll torsion bar stabilizing system for a snowmobile including a laterally disposed torsion bar attached to the frame including lever arms extending generally forwardly thereof. Links pivotally attach the torsion bar arms to the skis and angle inwardly of the skis so that the system reacts to both vertical and horizontal displacement of the skis during operation.

3,835,948
LIQUID COOLING SYSTEM FOR USE ON SNOWMOBILES

Marley J. Duclo, Brooten, Minn., assignor to HVP, Inc., Crosby, Minn.

Filed Dec. 15, 1972, Ser. No. 315,278
Int. Cl. B62m *27/02*; **B62k** *11/04*
U.S. Cl. 180—5 R **7 Claims**



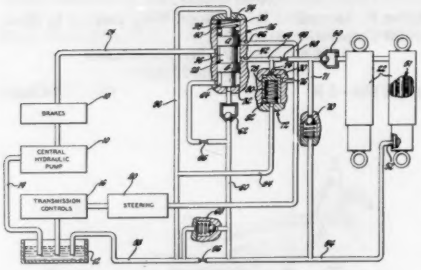
A cooling system for the engine coolant of a liquid cooled snowmobile engine. The cooling system is provided as a substitute for or a supplement to a conventional radiator normally used with internal combustion, liquid cooled engines. The cooling system comprises elongated tubes mounted adjacent the tunnel used for the snowmobile drive track whereby snow will drop directly onto the tubes to remove heat from the coolant at a relatively high rate as the snow is changed into a liquid.

3,835,949

HYDRAULIC LEVELING CONTROL SYSTEM

James E. Whelan, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 19, 1973, Ser. No. 407,897
Int. Cl. B60g 17/00
U.S. Cl. 180—41 4 Claims



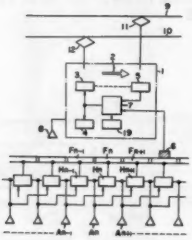
Control system including hydraulically operated vehicle levelers in which there is intermittent back pressure from the levelers on the supply pump and in which there is a control valve responsive to height signals from the levelers to direct pressure fluid to the levelers when the levelers are below level height and which directs fluid to a circuit bypassing the levelers when the levelers are above level height to thereby reduce pressure and volume requirements from the supply pump.

3,835,950

APPARATUS FOR CONTROLLING THE SPEED AND SPACING OF VEHICLES

Tetsumasa Asano; Hiroshi Takamiya, and Yoshinobu Morimoto, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 25, 1972, Ser. No. 291,621
Claims priority, application Japan, Sept. 23, 1971, 46-74309; Oct. 26, 1971, 46-84925; Oct. 28, 1971, 46-85857; Dec. 1, 1971, 46-96956; Oct. 23, 1971, 46-84201; Oct. 26, 1971, 46-84923; Oct. 29, 1971, 46-86127; Oct. 29, 1971, 46-86126; Oct. 27, 1971, 46-85289; Oct. 27, 1971, 46-85290
Int. Cl. B60t 7/18
U.S. Cl. 180—98 12 Claims



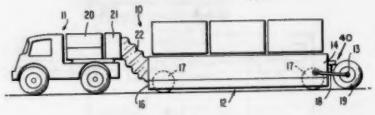
The fail-safe system for controlling separate vehicles running on a track, path or roadway permits both high vehicle speeds and high traffic densities. The system includes devices for measuring the speed of a lead vehicle and also the spacing between vehicles. A control system is provided which develops a control signal proportional to the square root of the sum of a signal proportional to the vehicle spacing and a signal proportional to the square of the lead vehicle speed. Alternatively, the control system may provide a control signal proportional to the sum of signals proportional to the lead vehicle speed and to the square root of the vehicle spacing. These control signals are used to regulate the speed and following distance of vehicles behind the lead vehicle. Various other alternative embodiments of the invention are disclosed, as are several novel features such as an emergency braking system.

3,835,951

SEMITRAILER-LIKE MOTOR VEHICLE WITH AIR CUSHION TRAILER FOR TRANSPORTATION OF LOADS

Eberhard Hundt, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Dec. 23, 1971, Ser. No. 211,536
Claims priority, application Germany, Dec. 23, 1970, 2063479
Int. Cl. B60v 3/02
U.S. Cl. 180—119 25 Claims



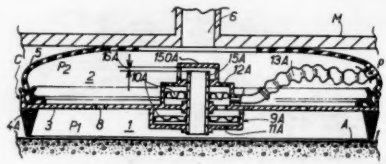
A semitrailer-like motor vehicle for the transportation of loads, for example, of containers in which the load carrier is constructed in the manner of an air cushion vehicle and the towing vehicle includes a blower driven from an internal combustion engine for producing the air cushion of the semitrailer-like load carrier; the towing vehicle is so connected with the load carrier that the pressurized air and driving forces can be transmitted; the load carrier includes also a trailing axle structure with wheels thereon adapted to be braked.

3,835,952

ATTITUDE COMPENSATION METHOD AND SYSTEM FOR GROUND-EFFECT MACHINES

Francis Marie Jean Croix-Marie, Chatillon, and Daniel Jean-Marie Dubois, Gif-sur-Yvette, both of France, assignors to Bertin & Cie, Plaisir, France

Filed Jan. 26, 1973, Ser. No. 326,787
Int. Cl. B60v 1/00
U.S. Cl. 180—118 11 Claims



A ground-effect machine is designed for travelling along a bearing surface through the medium of a lift cushion system provided with a suspension system which includes a deformable pneumatic chamber interposed between the machine frame and the cushion proper. This cushion and this chamber have an associated fluid circuit which may comprise a passage intercommunicating them and which is so designed that the cushion pressure or lift pressure is, depending on the type of ground-effect machine, either greater or smaller than ambient pressure but in any event closer thereto than the pneumatic chamber pressure or suspension pressure.

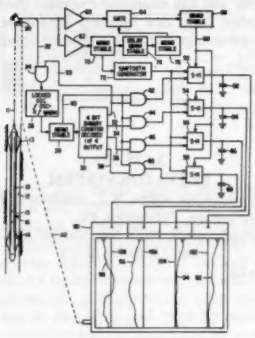
This attitude of this ground-effect machine is compensated through regulation of these lift and suspension pressures in order to maintain their ratio at a predetermined value, by detecting any deviation of their actual ratio from said predetermined value, and by restoring it thereto with a relatively long response time through variation - modulated as a function of the detected deviation - of a pressure loss provided at a convenient location of the above-mentioned fluid circuit, preferably at the intercommunicating passage.

3,835,953

ACOUSTIC CALIPER LOGGING

Gerald C. Summers, Dallas, Tex., assignor to Simplec Mfg. Co., Inc., Dallas, Tex.

Filed Jan. 26, 1973, Ser. No. 326,771
Int. Cl. G01v 1/40
U.S. Cl. 181—0.5 BE **13 Claims**



Acoustic pulses transmitted horizontally from a unit in a borehole are reflected at the borehole walls and the reflections are detected. Time functions representative of travel time of the reflected pulse are then recorded on segmented bases representing limited spaced apart segments of the borehole wall but in a continuous traverse of a path along such wall. In one embodiment, four vertical segments are continuously traversed. In another embodiment, horizontal segments at each of a plurality of successively deeper locations, preferably uniformly spaced, are continuously traversed.

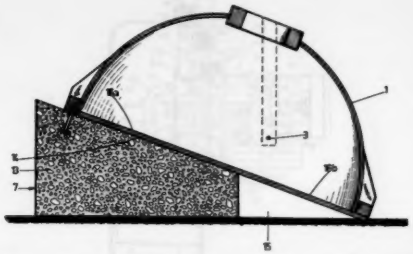
3,835,954

APPARATUS FOR INDUCING SHEAR WAVES IN THE EARTH

Pierre Claude Layotte, Royan, France, assignor to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed Feb. 2, 1972, Ser. No. 223,682
Claims priority, application France, Feb. 5, 1971, 71.04041
Int. Cl. G01v 1/10
U.S. Cl. 181—.5 EC **20 Claims**

Apparatus for inducing shear waves in the earth, comprising a rigid enclosure including a dome-shaped wall and a surface for coupling to the earth, means for detonating an explosive charge in said enclosure under such conditions as to create a lateral dissymmetry of the explosive forces applied to said wall in order to produce a lateral resultant force parallel to said coupling surface and means for transmitting said resultant force to the ground, thereby inducing shear waves therein.

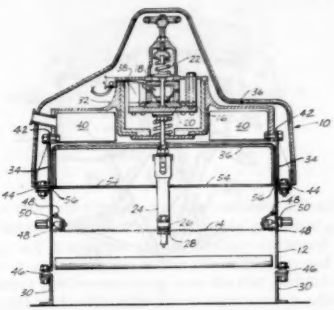


3,835,955

NOISE REDUCING APPARATUS FOR A VIBRATING SCREEN SIFTING MACHINE

Richard Ernest Harkness, Hudson, Ohio, assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 14, 1973, Ser. No. 415,696
Int. Cl. E04b 1/84
U.S. Cl. 181—33 K **5 Claims**



Noise reducing apparatus for a vibrating screen sifting machine including a jacket made of lead-impregnated plastic and expanded cellular material for the housing of the vibrating mechanism, a mastic material coating on the outer surface of the screen frame, and rubber inserts between various of the metal components.

3,835,956

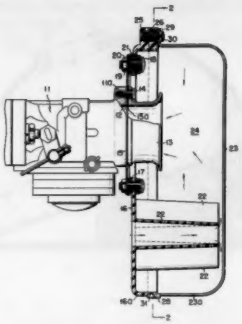
INTAKE SILENCER FOR AN INTERNAL COMBUSTION ENGINE

Nozumu Kishira, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata-shi, Japan

Filed May 11, 1973, Ser. No. 359,303
Claims priority, application Japan, May 13, 1972, 47-55724
Int. Cl. F01n 1/00
U.S. Cl. 181—35 A **9 Claims**

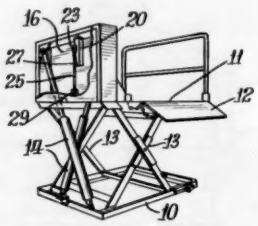
An intake silencer for an internal combustion engine disposed on the intake side of a carburetor has an expansion chamber formed by a base board and a cover which are

shaped like a pan, and in which there are disposed air horns connected to the carburetor and silencer tubes introducing



the external air into the chamber. The base board and silencer tubes are integrally molded with synthetic resin.

3,835,957
DEFLECTION SAFETY CONTROL FOR PLATFORM OF VERTICAL RISING LIFT
Lawrence I. Richards, Elk Grove Village, Ill., assignor to Autoquip Corporation, Chicago, Ill.
Filed Apr. 13, 1973, Ser. No. 350,678
Int. Cl. E04g *1/18*
U.S. Cl. 182—19 **5 Claims**



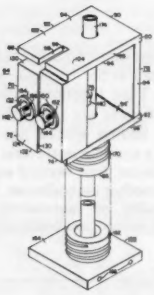
A deflection safety control for the platform of a scissors lift comprises a pendulum mounted on the platform and having a switch actuated by a part of the pendulum extending above the pivot point.

3,835,958
PORTABLE STEP AND A STAND FOR USE IN HUNTING WILDLIFE INCLUDING THE SAME
Arnold C. Hegele, 401 W. Locust St., Canton, Ill. 61520
Filed July 31, 1973, Ser. No. 384,238
Int. Cl. E06c *9/04*
U.S. Cl. 182—92 **14 Claims**

Portable steps are provided which are adapted to be detachably mounted on the trunk of a tree at progressively increasing heights to thereby allow the tree to be easily climbed. The invention also provides a stand for use in hunting wildlife which includes a plurality of the portable steps detachably mounted on the trunk of a tree at progressively increasing heights and arranged whereby a person climbing the tree may step from a lower step to the next higher step and thereby climb the tree from the ground level to the desired stand height. In a preferred embodiment, a seat is provided including an elongated seating member which is supported by at least two of the steps arranged circumferentially on the tree trunk in spaced relationship at approximately the same height.

The portable steps are especially useful in constructing temporary deer stands and the equipment needed therefor may be easily transported from one location to another by a deer hunter to take advantage of the best hunting conditions.

3,835,959
ELEVATOR SYSTEM
Frederick Solymos, Glen Ridge, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 2, 1973, Ser. No. 347,285
Int. Cl. B66b *11/00*
U.S. Cl. 187—22 **13 Claims**



An elevator system having a car and counterweight interconnected by hoisting and compensating roping. A drive associated with the hoisting roping moves the car and counterweight in guided paths relative to floors of a building, while a compensator sheave tensions and guides the compensating roping. The compensator sheave includes braking apparatus which allows the compensator sheave to freely move with the compensating roping between predetermined vertical limits, automatically adjust for permanent stretch of the hoisting roping while maintaining the predetermined vertical limits of free movement, and to limit upward movement beyond a predetermined limit. The braking apparatus includes brake shoe mem-

bers carried by the compensator sheave, and fixed guide rail members, with the brake shoe members being biased to grip the guide rail members with a parallelogram squeezing action.

3,835,960

IMPROVEMENTS IN OR RELATING TO DISC BRAKES

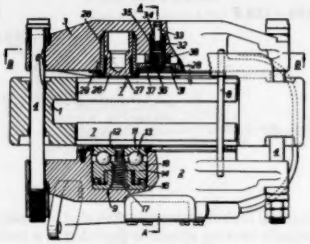
Norman Sidney Moss, Birmingham, England, assignor to Girling Limited, Birmingham, England

Continuation of Ser. No. 864,639, Oct. 8, 1969, abandoned. This application Dec. 16, 1971, Ser. No. 208,990

Claims priority, application Great Britain, Oct. 11, 1968, 48419/68

Int. Cl. F16d *65/56*

U.S. Cl. 188—71.9 **5 Claims**



A reaction type disc brake having mechanical actuation means in which a pair of mechanical actuators is arranged to act on one brake pad, being spaced apart circumferentially in relation to the brake disc and operated simultaneously by a common actuating member. Another feature resides in the provision of such a brake in which one pad is directly actuated by mechanical means, and automatic adjustment means are arranged to act on the other pad, thereby separating in construction the actuation and the automatic adjustment means.

A further aspect of the invention is the provision of a reaction type disc brake in which the yoke structure is in three portions. The centre portion is mounted in use directly upon the vehicle structure and guides the brake pads for movement towards and away from the brake disc. Inboard and outboard yoke sections are coupled together by tie rod means and the mechanical actuating mechanism is mounted on one or other of these outer yoke sections so that clamping forces arising during brake actuation are transmitted by the two outer yoke sections to the tie rods, without being transmitted to the centre yoke section, whereas drag forces arising during braking are taken entirely by the centre yoke section without being transmitted to the inboard and outboard yoke sections or the tie rods. This arrangement ensures that no principle stresses greater than the stresses due to the individual reactions are developed in the structural components of the yoke.

3,835,961

DISK TYPE BRAKE

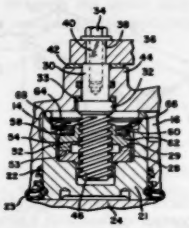
Thomas F. Troester, Dayton, and Russell E. Rike, Bellbrook, both of Ohio, assignors to Dayton-Walther Corporation, Dayton, Ohio

Filed May 7, 1973, Ser. No. 357,891

Int. Cl. F16d *65/56*

U.S. Cl. 188—71.9 **11 Claims**

A disk brake which includes automatic compensation for wearing of the brake pads and provides a mechanical system for applying the brake or holding the brake in place after actuation by the hydraulic system. The brake piston is movable relative to a threaded shaft. The piston has an annular toothed surface for like engagement with a rotatable pressure member



threaded on the shaft. On adjustment overtravel of the piston, the toothed surfaces separate, allowing a finger spring to rotate the pressure member and adjust the brake.

3,835,962

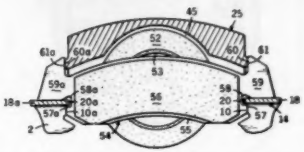
BRAKE SHOE

Edward J. Falk, St. Louis, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Continuation of Ser. No. 244,585, April 17, 1972, abandoned, which is a division of Ser. No. 82,332, Oct. 20, 1970, Pat. No. 3,768,604. This application Aug. 15, 1973, Ser. No. 388,475

Int. Cl. F16d *65/04*

U.S. Cl. 188—73.1 **2 Claims**



A spot disc brake having a support defining a fixed closed loop member substantially about a chordal portion of a rotatable disc, and a cylinder portion slidably anchored on the closed loop member adjacent one side of the disc and including a caliper portion extending over the disc chordal portion and slidably anchored on the closed loop member adjacent to the other side of the disc for moving a pair of opposed friction members into frictional engagement with the one and other sides of the disc at the chordal portion thereof. At least one of the friction members is provided with anchoring extensions embracing the caliper for transmitting braking torque thereto, and each anchoring extension having a supporting portion for engagement with the loop member to oppose deflection thereof.

3,835,963

FRICTION PIECE FOR BICYCLE RIM BRAKES

Kiyoshi Ohtani, Ageo, Japan, assignor to Bridgestone Cycle Industry Co., Ltd., Tokyo, Japan

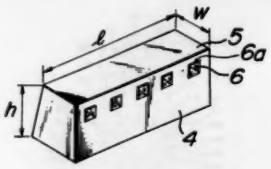
Continuation-in-part of Ser. No. 227,467, Feb. 18, 1972, , which is a continuation of Ser. No. 4,343, Jan. 20, 1970, abandoned. This application Oct. 11, 1973, Ser. No. 405,600

Int. Cl. F16d *65/02*

U.S. Cl. 188—73.1 **7 Claims**

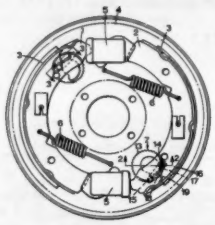
A friction piece for bicycle rim brakes, consisting of an elongated rubber body, e.g., with a trapezoidal lateral cross section. The body has a planar frictional contact surface engageable with a bicycle rim and a plurality of mutually spaced lateral holes which are bored in said body in the proximity of

the frictional contact surface. A planar edge surface is formed on that part of each lateral hole which is closest to the fric-



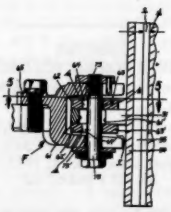
tional contact surface, said planar edge extending in parallel to the frictional contact surface with a distance of 2 mm or more therefrom.

3,835,964
SHOE-DRUM BRAKES
Hugh Grenville Margetts, Leamington Spa, England, assignor to Girling Limited, Birmingham, England
Filed Oct. 26, 1972, Ser. No. 301,058
Claims priority, application Great Britain Oct. 28, 1971, 50062/71; Oct. 28, 1971, 50063/71
Int. Cl. F16d *65/58*
U.S. Cl. 188—79.5 GT **8 Claims**



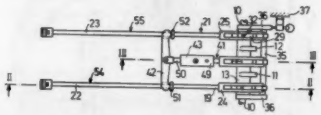
An adjuster for internal shoe drum brakes includes a dished pressing rotatably mounted on the back-plate of the brake, the side wall of the pressing providing a cam surface engaging with a pin extending from a shoe and the periphery of the pressing providing ratchet teeth engaging with a pawl movable with the shoe.

3,835,965
FRICTION-TYPE BRAKE ADJUSTMENT DEVICE
Richard A. Doversberger, Peoria, Ill., assignor to Westinghouse Air Brake Company, Peoria, Ill.
Filed Feb. 20, 1973, Ser. No. 333,583
Int. Cl. F16d *65/54*
U.S. Cl. 188—79.5 GT **11 Claims**



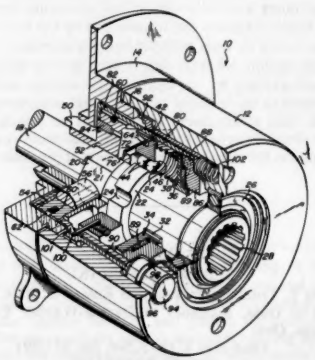
A friction-type brake adjustment device for maintaining a brake shoe in predetermined spacial relationship with a brake drum incorporating: a substantially U-shaped bracket for receiving the brake shoe web having a slot therein: and a stop member received within said slot and carried by and frictionally engaged with said bracket. Sets of guide bars outline the side edges of said slot, one set engages the stop member for urging same toward the brake drum in direct proportion to the wear of the brake lining, and the other set engages the stop member for preventing the return of said brake shoe to its original position.

3,835,966
BRAKING ARRANGEMENT
Gunther Schwerin, Moglingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed June 19, 1973, Ser. No. 371,565
Claims priority, application Germany, July 1, 1972, 2232373
Int. Cl. F16d *63/00*
U.S. Cl. 188—106 F **13 Claims**



A mechanical braking system is provided in a motor vehicle and a hydraulic braking system is provided in a trailer for the motor vehicle. A pair of separately journalled brake pedals are provided in the motor vehicle, and linkage rods connect each of the brake pedals with a component of the mechanical braking system. A coupling arrangement is movable between a first position in which it enforces joint movement of the brake pedals, and a second position in which it permits individual movements thereof. A second connecting arrangement connects the brake pedals with the hydraulic braking system only when the coupling arrangement is in its first position.

3,835,967
TORQUE LIMITER
Richard H. Kerr, Springfield, Ohio, assignor to Kelsey-Haynes Company, Springfield, Ohio
Filed June 29, 1973, Ser. No. 375,054
Int. Cl. B60t *7/12*
U.S. Cl. 188—134 **28 Claims**



A system for preventing application of excessive force or torque to a system by locking the system when some predetermined amount of overload is applied thereto. The system is comprised of an input assembly including an input shaft, an

output assembly including an output shaft and a pivot member interposed and transmitting drive between the input and output assemblies. In the event of an overload, the pivot member, which may be in the form of a pin or pins or a triangular member, pivots and permits limited rotational movement of the assemblies with respect to each other; thereby allowing camming surfaces carried on the input shaft to cam brake shoes carried by the output assembly into braking engagement with the inner, brake drum surface of the system casing.

3,835,968

ADJUSTING DEVICE FOR DRUM BRAKES

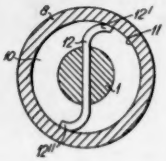
Hermann Seip, Bad Vilbek, Germany, assignor to ITT Industries, New York, N.Y.

Filed May 3, 1973, Ser. No. 356,981

Claims priority, application Germany, July 28, 1972, 2237050

Int. Cl. F16d *65/54*

U.S. Cl. 188—196 P **4 Claims**



This adjusting device compensates for brake lining wear in an internal brake shoe drum brake. Known adjusting devices for internal brake shoes have the disadvantage that a considerable force is necessary for actuation. In addition, there is a great likelihood of corrosion. The present invention relates to an adjusting device with an adjustable eccentric which requires smaller adjusting forces and is protected from corrosion. The improvement is achieved by providing a sealing arrangement in the eccentric to prevent corrosion and a frictional jamming element in the form of an S-shaped spring. This spring is prestressed with its ends lying against the inner wall of an inner bore of the adjusting eccentric. This spring is rigidly connected with the brake backing plate through intermediary components.

3,835,969

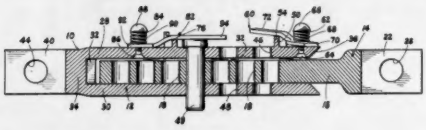
QUICK SLACK ADJUSTER FOR LOCOMOTIVE BRAKES

Roy H. Touchstone, P.O. Box 2003, Jackson, Tenn. 30801

Filed Nov. 27, 1972, Ser. No. 309,683

Int. Cl. F16d *65/44*

U.S. Cl. 188—197 **5 Claims**



A brake adjustment device for locomotives wherein slack in the brake mechanism may be quickly and easily adjusted, and the brake shoes may be quickly removed and replaced when they have become sufficiently worn, or are otherwise damaged or in need of repair. The adjustment device includes an apertured slide bar connected with the brake lever of a locomotive wheel and extending through a housing secured to the brake lever of an adjacent or in line locomotive wheel whereby the adjuster may be utilized in much the same manner as a turnbuckle for quickly adjusting the brakes. In addition, the slide bar device facilitates release of the brake lever to provide for a quick clearance between the brake shoe and wheel, thus reducing the time required for the replacement of worn brake shoes.

3,835,970

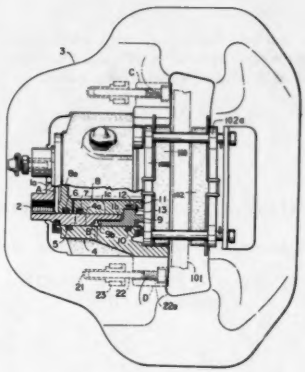
BRAKE CYLINDER ASSEMBLY

Tetsuo Haraikawa, Funabashi, Japan, assignor to Tokico Ltd., Kanagawa-ken, Japan

Filed Dec. 18, 1972, Ser. No. 316,400

Int. Cl. B60f *11/00*

U.S. Cl. 188—345 **3 Claims**



A brake cylinder unit for a hydraulic brake arrangement having first and second braking systems in which there is provided a single cylinder having at least two pistons slidable therein, with two hydraulically independent pressure chambers provided within the cylinder and defined by the pistons, the pistons are kept in mutual and partially overlapped relationship regardless of service or off-service conditions of the brake cylinder unit and a substantially Z-shaped gap provided between the two pistons when viewed in axial section and in the form of an annular space when viewed in cross section, with such gap serving as one of the hydraulic pressure chambers of the brake cylinder unit.

3,835,971

FLUID OPERATED CLUTCH AND BRAKE

Edwin A. Spanke, Oak Forest; Louis F. Carrieri, La Grange Park, and Melvin H. Francey, Palos Heights, all of Ill., assignors to Gulf & Western Manufacturing Company, New York, N.Y.

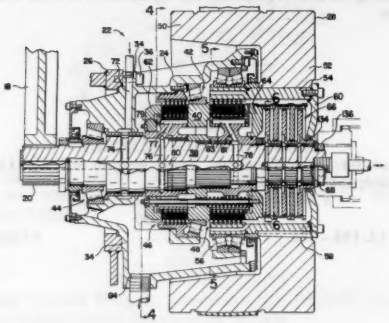
Filed Aug. 29, 1973, Ser. No. 392,681

Int. Cl. F16d *67/04*

U.S. Cl. 192—18 A **10 Claims**

A press drive mechanism is disclosed having brake and clutch disc assemblies concentric with respect to the output shaft of the mechanism, and a concentric fluid operated

piston-cylinder assembly for alternately actuating the brake and clutch mechanisms. Air actuated and hydraulic fluid actu-



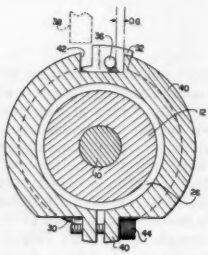
ated piston and cylinder arrangements are disclosed, and an arrangement is disclosed for incremental rotation of the output shaft when the brake mechanism is actuated.

3,835,972

ADJUSTING COLLAR FOR SINGLE REVOLUTION SPRING CLUTCH

Elton L. Helander, Guilford, Conn., assignor to Helander Products, Inc., Clinton, Conn.

Filed Dec. 26, 1972, Ser. No. 318,572
Int. Cl. F16d *11/06*
U.S. Cl. 192—26 **1 Claim**



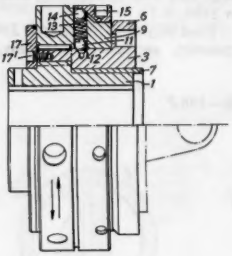
The single revolution spring clutch comprises a spring wrapped around adjacent input and output hubs, a release collar for releasing the spring from coupling engagement with the input hub when the collar is stopped from rotating with the clutch assembly and a clamp type adjusting collar. The adjusting collar is clamped on the output hub and coupled, by means of a pin and slot, to the release collar. The angular relationship between the release collar and the output hub can be conveniently varied after the clutch is mounted on the shaft of a machine. The adjusting collar is clamped to that end of the spring which is wrapped on the output hub and serves to clamp this end of the spring to the output hub. The adjustment is accomplished by loosening the adjusting collar, rotating the release collar to the desired position and retightening the adjusting collar.

3,835,973

TORQUE LIMITING DEVICE

George Roderick Derham Braggins, Virginia Water, and Donald Humphrey Pooley, Woodley, both of England, assignors to The Wellman Bibby Company Limited, Staines, Middlesex, England

Filed Sept. 25, 1972, Ser. No. 291,800
Claims priority, application Great Britain, Sept. 30, 1971, 45555/71
Int. Cl. F16d *43/20*
U.S. Cl. 192—56 R **12 Claims**



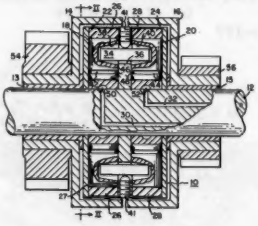
In a torque limiting device, torque is transmitted between first and second coaxial torque members by a rolling element. The rolling element is seated in a seating in the first torque member and located in an aperture in the second torque member. The rolling element is held in its seating by a cam surface on a locking member and on overload, is movable in the aperture out of the seating by moving the locking member in a circumferential direction against a resilient bias.

3,835,974

INTERNAL CLUTCH

Charles E. Kraus, Austin, Tex., assignor to Excelermatic, Inc., Austin, Tex.

Filed Jan. 5, 1973, Ser. No. 321,293
Int. Cl. F16d *19/00*
U.S. Cl. 192—87.15 **10 Claims**



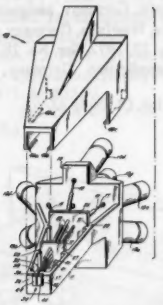
An internal clutch for coupling a rotatable disc with either one of rotatable annular members closely surrounding different portions of the disc, wherein a number of pistons are disposed in radial cylinders formed in each portion of the disc and means are provided for selectively forcing the pistons in either portion of the disc toward the respective annular member for frictional engagement thereof with the disc.

3,835,975

PRINTER HEAD ASSEMBLY

Robert Howard, 20 Redwood Dr., Roslyn, N.Y. 11576

Continuation of Ser. No. 179,457, Sept. 10, 1971, , which is a continuation of Ser. No. 37,815, May 15, 1970, abandoned.
This application Aug. 2, 1973, Ser. No. 385,157
Int. Cl. B41j 3/10
U.S. Cl. 197—1 R 3 Claims



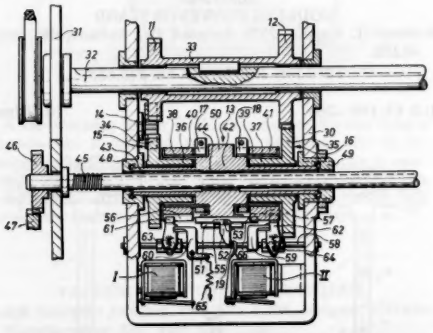
A solenoid assembly for use in high speed printers of the dot matrix type wherein the solenoid construction is of such a design as to be extremely lightweight and capable of high speed operation so as to cooperate with the printer head assembly to provide a compact, lightweight design adapted to be moved at high rates of speed across a paper document. The solenoid armature is biased by a circular shaped biasing spring which is prevented from bending beyond its flat shape when it abuts against the interior surface of the solenoid assembly end cap.

3,835,976

DEVICE FOR MOVING A PRINT ELEMENT CARRIER IN TYPEWRITERS

Herbert Behrens, Neuenburg, and Gunther Wohlbier, Grafschaft, both of Germany, assignors to Olympia Werke A.G., Wilhelmshaven, Germany

Filed Aug. 21, 1973, Ser. No. 390,204
Claims priority, application Germany, Aug. 30, 1972, 2242663
Int. Cl. B41j 19/00
U.S. Cl. 197—82 15 Claims



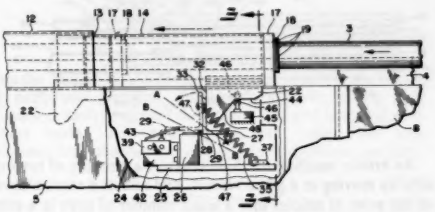
In a typewriter or similar printing machine the print element carrier is moved by virtue of the cooperation between a lead screw stationarily supported in the machine frame and a rotatable nut member supported in the print element carrier and threadedly engaging the lead screw. The print element carrier supports a clutch which has two inputs including driven components continuously rotated in opposite directions. An escapement mechanism, when in its normal, non-actuated condition, locks both inputs for preventing any driving torque to be transmitted to the nut member by either continuously driven component. A two-position selector mechanism locks either the one or the other input. When the escapement mechanism is actuated, the latter is withdrawn from both inputs and, as a result, a driving torque is transmitted to the nut member solely by that clutch input which is not locked by the selector mechanism.

3,835,977

HANDRAIL GUARD

John H. Hewitt, Tallmadge, and Deane W. Richardson, Worthington, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed June 25, 1973, Ser. No. 373,109
Int. Cl. B66b 9/12
U.S. Cl. 198—16 R 14 Claims



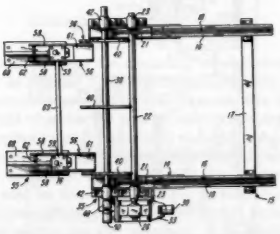
A handrail guard for a passenger conveyor balustrade having a handrail cover movable along the handrail by objects on the handrail to prevent injury to the objects and conveyor. A spring mechanism resists initial movement of the cover and then releases the cover for substantially free movement for a short period of time during which the conveyor is stopped by a switch mechanism connected to the spring mechanism. A sensory and deflecting warning means is carried by the cover to expedite the removal of objects from the handrail during the initial movement of the cover and thereby reduce the shutdown time of the conveyor.

3,835,978

LOG TRANSFER APPARATUS

George W. Hartzell, and Robert J. Gunnerman, both of Piqua, Ohio, assignors to Hartzell Industries, Inc., Piqua, Ohio

Continuation-in-part of Ser. No. 152,751, June 14, 1971, Pat. No. 3,747,455. This application Oct. 30, 1972, Ser. No. 301,992
Int. Cl. B65g 47/08
U.S. Cl. 198—22 R 5 Claims



A supply of logs are successively transferred from an endless deck conveyor to a sawmill carriage by a log transfer

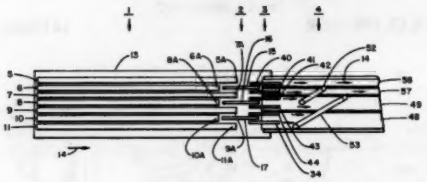
rotor and log positioning cradles. The rotor includes a shaft supporting a plurality of axially spaced transfer elements each having diametrically opposed recesses for receiving logs. The log positioning cradles are arranged in parallel relation to the rotor and are supported for vertical movement by corresponding fluid cylinders. The log transfer rotor and deck conveyor are independently driven by corresponding motors which are operated in timed relation by an automatic control system.

3,835,979

ARTICLE HANDLING MACHINE

Rodney K. Calvert, Dunwoody, and Alton J. Fishback, Austell, both of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Apr. 30, 1973, Ser. No. 355,522
Int. Cl. B65g *47/26*
U.S. Cl. 198—30 **7 Claims**



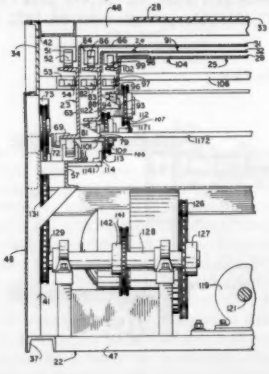
An article handling machine receives a plurality of rows of articles moving at a given velocity and effects a reorientation of the rows of articles into a lesser number of rows in a controlled and orderly fashion. Metering means receives the articles from a plurality of conveyor means and regulates the movement thereof in sequence in a predetermined manner and accelerating means engages the articles and substantially increases the velocity of movement thereof thereby increasing the space between the articles. Converger means then engages the articles and imparts transverse movement thereto relative to the direction of movement imparted by the accelerating means so as to cause the articles to accummulate in sequence on an outfeed conveyor.

3,835,980

CONVEYOR WITH EXTENDIBLE BOOMS

James Brooks, Jr., Green Township, Hamilton County, Ohio, assignor to Jack McDonald, Cincinnati, Ohio

Filed Mar. 20, 1973, Ser. No. 342,998
Int. Cl. B65g *15/26*
U.S. Cl. 198—139 **6 Claims**



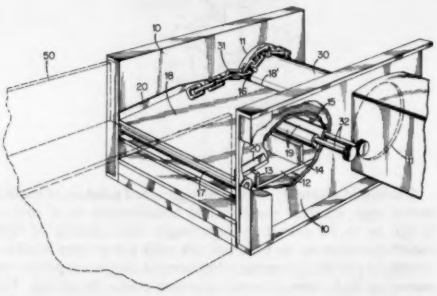
A conveyor structure which comprises a base and a plurality of booms mounted thereon. The booms are interconnected to move in and out together. A belt travels on upper plates of the base and booms. A belt take-up carriage is connected to boom advancing means so that the length of the portion of the belt on the upper plates is increased as the booms are extended and reduced as the booms are retracted.

3,835,981

FRAME ASSEMBLIES FOR USE WITH SCRAPER-CHAIN CONVEYORS

Werner Rafael, Altlunen, Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed Aug. 22, 1972, Ser. No. 282,716
Claims priority, application Germany, Sept. 1, 1971, 2143648
Int. Cl. B65g *15/60*
U.S. Cl. 198—204 **8 Claims**



A frame assembly for a scraper-chain conveyor and having two parallel side walls attached together with transverse walls. The side walls have apertures therein for receiving bearings of a chain drum or wheels. One or more horizontal wall is welded between the side walls and a plurality of upright reinforcing ribs are in turn welded to the horizontal wall. The rib nearest the apertures carries a chain deflecting/guiding member.

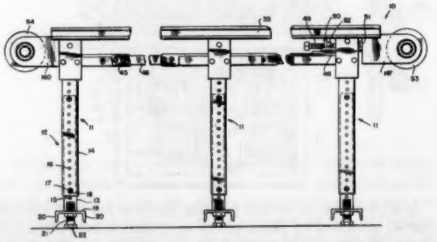
A plate, adjustable in relation to the side walls, is pivotably supported at the end of the assembly for attachment to a conveyor. The plate is inclined in relation to the horizontal wall and the ribs are located between the plate and the horizontal wall. The plate is supported on adjustable eccentrics or the like used to enable the position of the plate to be altered in accordance with the diameter of the drum or wheels accommodated by the assembly.

3,835,982

MODULAR CONVEYOR STAND

Anthony T. Zappia, 7576 Ivywood Dr., Indianapolis, Ind. 46250

Filed July 2, 1973, Ser. No. 375,653
Int. Cl. B65g *15/60*
U.S. Cl. 198—204 **10 Claims**



A conveyor stand and a conveyor system in which such stands are used to support an endless conveyor strand,

together with other elements, all readily assemblable with such stands to produce, from a few kinds of stock parts, any one of a great variety of conveyor systems, the assembling being readily accomplished at the site of proposed use of the conveyor system.

3,835,983

METHOD AND APPARATUS FOR CONVEYANCE OF GOODS BY VIBRATING PLATES

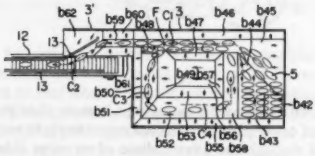
Taro Horii, Hamamatsu, Japan, assignor to Maki Manufacturing Co., Ltd., Shizuoka-ken, Japan

Filed Nov. 12, 1971, Ser. No. 198,106

Claims priority, application Japan, Apr. 22, 1971, 46-26348; Aug. 16, 1971, 46-62150

Int. Cl. B65g *27/04*

U.S. Cl. 198—220 BA **1 Claim**



A method for conveyance of goods by vibration, and a transportation mat, in which a transportation mat, having an assemblage of many needle-like, bar-like, or fin-like elastic projections, planted closely together and aslant in a certain direction relative to the perpendicular to the surface of a vibrating plate, is arranged on such surface with the projections slanting in conformity with the conveyance pattern of the goods to be conveyed, to control the conveyance condition of goods, such as moving, change of direction, gathering, distribution, alignment, pooling, or others.

3,835,984

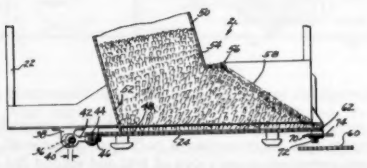
RECIPROCATING FEEDER

Alston L. Reed, 1046 Midway, Northbrook, Ill. 60062

Filed Nov. 24, 1972, Ser. No. 309,609

Int. Cl. B65g *27/00*

U.S. Cl. 198—220 BA **9 Claims**



A reciprocating feeder for feeding coal or the like from a hopper onto a conveyor belt. The discharge end of the reciprocating feeder is provided with a shaped plate to even out the dumping of the coal or the like onto the belt so that a more or less continuous supply of coal is provided on the belt rather than discrete piles or lumps as in the prior art.

3,835,985

VACUUM ASSIST CAN UNSCRAMBLER

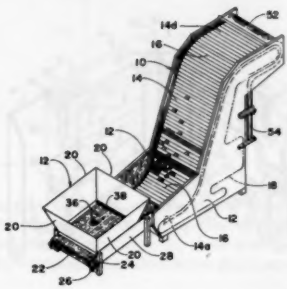
Ralph Ketchum Johnson, Palo Alto, Calif., assignor to Wiebe Manufacturing, Inc., Palo Alto, Calif.

Filed June 19, 1972, Ser. No. 264,382

Int. Cl. B65g *47/24*

U.S. Cl. 198—33 AA **9 Claims**

Apparatus for orienting randomly disposed cylindrical containers on a conveyer having a stationary incline bed which has two perforated portions across the bed with vacuum suction at the perforated portion, and having parallel guide rods horizontally spanning the incline bed and movable up the incline face pushing containers randomly disposed between the guide rods. The guide rods, which are spatially displaced from the incline bed, move immediately adjacent the bed at the perforated portions, dropping containers having their cylindrical surface against the incline bed and retaining containers having their ends against the incline bed with assistance from the vacuum suction at the perforated portion.



3,835,986

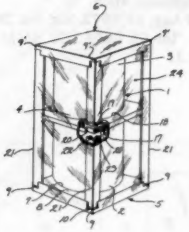
COMPOSITE PACKAGE

Donald J. Le Beau, Bourbonnais, Ill., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Jan. 30, 1973, Ser. No. 328,084

Int. Cl. B65d *65/16, 81/00, 85/00*

U.S. Cl. 206—320 **7 Claims**

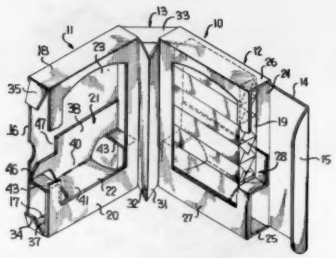


A composite package for enclosing a cylindrically shaped object such as a water heater. Substantially rectangular end members provide locating depressions to receive the ends of the cylindrical object while a substantially rectangular intermediate member provides a circular opening and encircles an intermediate portion of the cylindrical object. Four elongated reinforcing members are positioned to engage locating notches formed at the corners of the intermediate member and extend toward and are positioned within corner depressions formed within the end members. A bi-axially oriented heat shrunk synthetic transparent film is extended externally around the end, intermediate and reinforcing members to hold such members in assembled relation and protect the cylindrical object while permitting visual inspection thereof.

3,835,987
STORY BOOK CARTON LOCKING ASSEMBLY

Lawrence J. Growney, Pearl River, N.Y., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Dec. 19, 1969, Ser. No. 886,586
Int. Cl. B65d *5/50*
U.S. Cl. 206—45.11 **6 Claims**

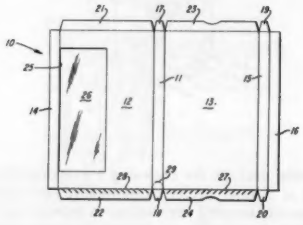


This disclosure relates to a carton in the form of a story book wherein the carton includes first and second sections hinged together opening in a book opening-like action with the first section being of a hollow construction for receiving a product therein and including inner and outer panels with a support panel assembly interconnecting the inner and outer panels, the support panel assembly having a free edge portion disposed in face-to-face readily separable relation to the inner face of the outer panel along a free edge of the outer panel remote from the second section and cooperating therewith to define a locking flap anchoring slot, the formation of the anchoring slot utilizing solely the support panel assembly in conjunction with the outer panel while at the same time in no way detracting from the function of the support panel assembly.

3,835,988
WINDOW CARTON

Kenneth T. Buttery, Kalamazoo, Mich., assignor to Brown Company, Kalamazoo, Mich.

Filed Aug. 24, 1972, Ser. No. 283,535
Int. Cl. B65d *5/02, 65/18*
U.S. Cl. 206—45.31 **12 Claims**

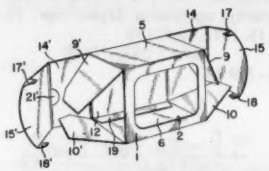


A paperboard carton having a generally rectangular cross-section is made up of a plurality of interconnected panels. One of the panels is provided with a window opening therein and situated from the edge of the panel at a distance less than the width of an adjacent panel. Each adjacent panel having an edge within a distance of less than the width of said adjacent panel from said window opening is made up of at least three thicknesses of paperboard extending the full length of the panel.

3,835,989
CARTON WITH TWO COVERS

Takahisa Mori, Itami, and Izuru Matsubara, Hirakata, both of Japan, assignors to The Ezaki Glico Kabushiki Kaisha, Osaka-fu and Dai Nippon Printing Company Limited, Tokyo, both of, Japan

Filed Mar. 2, 1973, Ser. No. 337,549
Claims priority, application Japan, Apr. 27, 1972, 47-49823[U]
Int. Cl. B65d *5/72*
U.S. Cl. 206—45.31 **6 Claims**

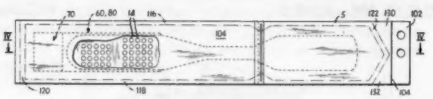


A carton with two covers including a bottom plate provided with a pair of cover plates connected respectively to each side-end thereof through the intermediate of an outer side-plate, said cover plates having a width slightly wider than a half of the width of a top plate so that they cooperate with by each other to close or open, as required, the emptying passage defined on the top plate by being inserted inwardly through a gap defined between the top plate and the inner side-plate.

3,835,990
THERMOMETER PACKAGING

Zsigmond L. Sagi, Parsippany; Robert C. Comer, Rockaway; Norman Andersen, Totowa; John R. Burtha, Essex Falls, all of N.J., and Samuel Pertchik, Long Beach, N.Y., assignors to Bio-Medical Sciences Incorporated, Fairfield, N.J.

Filed Oct. 25, 1972, Ser. No. 300,495
Int. Cl. G01k *11/08*
U.S. Cl. 206—306 **11 Claims**

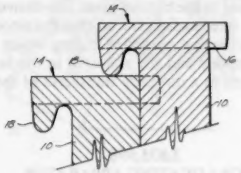


A sterile thermometer package in which a generally flat disposable type thermometer is packaged is disclosed. The package comprises an envelope of first and second flat strips of material having vapor impervious and heat sealable character which are heat sealed together in a continuous heat seal course encircling the thermometer. A removable shield is disposed in the thermometer and is designed to maintain the thermometer operative indicating components separated until required for use, the shield having a pull tab thereon with which peeling removal of the same is initiated, the tab being anchored within and to the envelope on one end of the latter. To remove the thermometer from the package, the envelope is opened at the other end thereof to expose the thermometer handle and the thermometer then is removed from the envelope by pulling force applied to the thermometer such pulling action effecting removal of the shield within the package during course of the thermometer removal from the package. Further during removal of the thermometer from the package, a presser comb unit presses the operative elements in the indicating end of the thermometer into operative communication.

3,835,991
NAIL AND METHOD AND APPARATUS FOR MAKING SAME

Carl T. Brecht, Cincinnati, Ohio, assignor to Senco Products, Inc., Cincinnati, Ohio

Filed Sept. 15, 1972, Ser. No. 289,487
Int. Cl. B65d *73/02*
U.S. Cl. 206—343 **3 Claims**

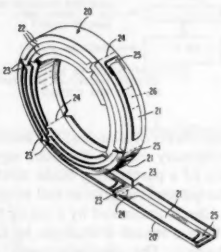


Nail for use in magazine fed nailing machine having a notched head and a depending abutment on the underside of the head so that when a plurality of nails are aligned in a strip with the shank of one nail engaged in the notch of the preceding nail, the depending abutment will space the heads of adjacent nails apart in the direction of driving.

3,835,992
BANDAGE DISPENSING PACKAGE

John Q. Adams, IV, 1206 Foxcroft Rd., Richmond, Va. 23229

Filed Oct. 24, 1972, Ser. No. 300,149
Int. Cl. A61l *15/00*; **B65d** *85/67*
U.S. Cl. 206—390 **8 Claims**



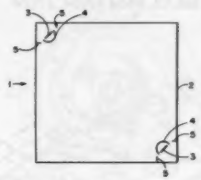
An elongated strip carrier for a plurality of bandages serves as a clean storage package for the bandages and also aids greatly in the dispensing of individual bandages as they are needed. Bandages may be mounted on one or two sides of the carrier strip and the strip may be coiled or otherwise formed into a compact storage body. The awkward handling of individually wrapped small bandages is avoided.

3,835,993
FILM SHEET DISPENSING

Milton A. Howe, Jr., 505 Perrin Dr., Spartanburg, S.C. 29302; Everett H. Dexter, 613 Holly Spring Rd., Lyman, S.C. 29365, and Eugene D. Thompson, 212 Dallwood Dr., Greenville, S.C. 29609

Filed Feb. 14, 1972, Ser. No. 225,820
Int. Cl. B65d *83/00*
U.S. Cl. 206—451 **5 Claims**

This invention is an apparatus for dispensing film sheets which are used for wrapping hamburgers, sandwiches, or other products which must be hand wrapped quickly. The film sheets are stacked and stapled at least one corner with cooperating slits cut in the film near the staple. The sheets can be easily and rapidly torn from the stack with the remaining film held firmly by the staple so that film fragments do not contaminate the product. A dispensing tray is provided which

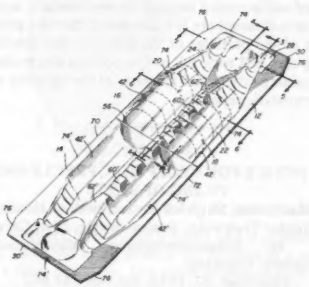


further secures the stack of film sheets. Products can be wrapped by placing them on the top sheet of film and lapping the corners over the product so the sheet is torn from the staple thereby wrapping the product as the sheets are dispensed.

3,835,994
CONE PACKAGE

Paul Davis, Swampscott; David Schneider, Lexington, both of Mass., and Paul Hollinger, Pikesville, Md., assignors to Sweetheart Plastics, Inc., Wilmington, Mass.

Filed May 18, 1972, Ser. No. 254,481
Int. Cl. B65d *81/16, 85/30*
U.S. Cl. 206—499 **9 Claims**



A package for ice cream cones including a pair of generally rectangular complementary panels made of an expanded foam plastic material with each panel having a pocket which corresponds in shape to the shape of a number of nested ice cream cones. The panels completely enclose the cones in the pockets when oriented in face to face relation, and the assembled cones and panels fit in a box which is smaller in thickness than the assembly so as to preload the cone package to prevent movement of the cones in the box.

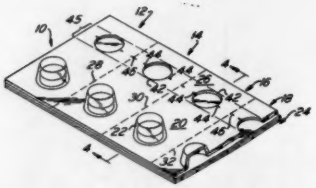
ERRATUM

For Class 206—519 see:
Patent No. 3,836,042

3,835,995
TAMPERPROOF PACKAGE

Russell R. Haines, Cherry Hill, N.J., assignor to PACO Packaging, Inc., Pennsauken, N.J.

Filed July 12, 1972, Ser. No. 270,877
Int. Cl. B65d *83/04, 17/24*
U.S. Cl. 206—42 **5 Claims**



A tamperproof package having a plastic carrier heat-sealed to a laminate except for a transverse zone is disclosed. A tear-off strip beginning at the transverse zone must be torn off before the laminate may be separated from the carrier layer to prevent access to a product in a pocket on the carrier.

3,835,996
PROCESS FOR THE ELECTROSTATIC SEPARATION OF CLAY CONTAINING CRUDE POTASSIUM SALTS

Arno Singewald, Kassel; Gunter Fricke, Neuhof, and Detlef Jung, Meitingen, all of Germany, assignors to Kali and Salz AG, Kassel, Germany

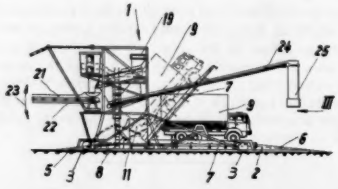
Filed Aug. 22, 1972, Ser. No. 282,839
Int. Cl. B03b *1/04*
U.S. Cl. 209—9 **9 Claims**

Crude argillaceous potassium salts are separated by first subjecting the crude salt to a conditioning with 2,6-dinitrophenol or a mixture of said dinitrophenol, a halogenocarboxylic acid and water and thereafter the thus-conditioned salt is passed through an electrostatic separator in which a warm atmosphere is maintained, thereby producing a separation of the particles of the salt into two fractions, one containing clay and rock salt at the positive electrode and the other containing sylvite and kieserite at the negative electrode of the electrostatic separator.

3,835,997
MOBILE DEVICE FOR RECEPTION, PRECLEANING AND PILING OF BEETS

Heinrich Hartmann; Siegfried Stelter, both of Hondelage, and Heinz-Gunter Trelewsky, Braunschweig, all of Germany, assignors to Braunschweigische Maschinebauanstalt, Braunschweig, Germany

Filed Mar. 22, 1973, Ser. No. 343,862
Claims priority, application Germany, June 2, 1972, 2226740
Int. Cl. B07c *1/04*
U.S. Cl. 209—73 **10 Claims**



A mobile device for reception, precleaning and piling of sugar beets using an end-tipping device as discharging equipment for beet delivering vehicles, a precleaning device for dirt separation and a laterally and vertically sluable overhand beam with a conveyer to pile the sugar beets. A folded flap is arranged between the tipping platform and the ramp for the end-tipper and forming a part of the passable bottom of the tipper in its lower position. In its upward position the flap defines a collecting area in combination with one lateral wall at the outside of the tipper for receiving the sugar beets falling off the dumping vehicle which is immediately emptied from beets by a conveyer in the bottom area. This conveyer moves the beets into an intermediate bin so that the tipper is ready for a further discharging operation during which the intermediate bin is emptied and the conveyer in the bottom area transports the beets in a direction transverse of the length of the end-tipper.

3,835,998
EDGE LOCATING APPARATUS

Richard O. Cobb, and James Lipp, both of Poughkeepsie, N.Y., assignors to International Business Machine Corporation, Armonk, N.Y.

Filed July 2, 1973, Ser. No. 375,985
Int. Cl. B07c *5/342*
U.S. Cl. 209—111.7 **17 Claims**

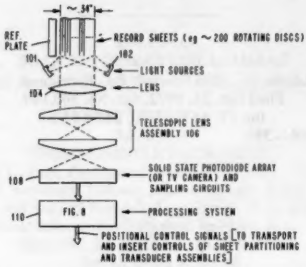


FIG. 8

Flexible storage sheets of a laminar file assembly are sensed in multiple by stationary sensors. Resultant signals are used to control operation of a partitioning blade mechanism relative to randomly selected sheet interfaces and to verify integrity of such operation. Sheets unmasked by a cursor mask registered with the blade tip are sensed in multiple by stationary optics and photoelectronics. The photoelectronic signals are repeatedly sampled, staticized and counted by shifting and counting electronics. The count derived from each sample represents the instantaneous location of the blade tip relative to the sheets. The counts are used to indicate: sheet stability (e.g., for predictive or extrapolative control relative to continually moving sheets), instantaneous location of a specific sheet interface relative to the partitioning mechanism and/or integrity of a partitioning operation currently in progress. Due to the multiple sensing organization subject apparatus is virtually insensitive to transient error in the sensors or electronics. Errors are not cumulative since the count derived from each sample represents a complete information (addressing) entity.

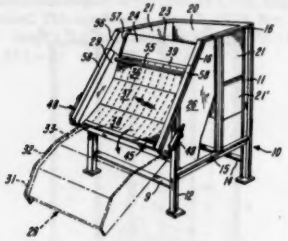
3,835,999
SCREEN UNITS USED FOR DEWATERING AND CLASSIFYING THE CONTENTS OF A LIQUID SLURRY

William P. Moore, Springfield, Ohio, assignor to The Bauer Bros. Co., Springfield, Ohio

Filed Oct. 18, 1972, Ser. No. 298,476
Int. Cl. B07b *1/28*
U.S. Cl. 209—251 **17 Claims**

Dewatering and classifying apparatus embodying a screen, presenting an inclined, preferably multi-planar, flow surface.

The screen has an unique hinged support at its lower end which facilitates its mount and selective disposition for ease of



maintenance and use and its readily interchangeability, as and when required.

3,836,000

PROCESS AND APPARATUS OF HANDLING WATER WHICH IS CONTAMINATED WITH AN OILLIKE LIQUID

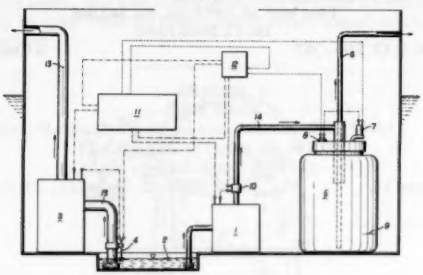
Peter Jakubek, Brunn Am Gebirge, Austria, assignor to Fa. International Pollution Control Systems, Inc., Washington, D.C.

Filed July 8, 1971, Ser. No. 160,779

Claims priority, application Austria, July 13, 1970, 6372/70; Jan. 22, 1971, 534/71; June 3, 1971, 4826/71

Int. Cl. B01d *29/36*

U.S. Cl. 210—104 **18 Claims**



A liquid to be handled forms a body having a lower layer consisting of water substantially free of oillike liquid and an upper layer which comprises an oillike liquid. Water from said lower layer is pumped directly from said body. Liquid is pumped from said upper layer and is subjected to a separating treatment to remove oillike liquid.

3,836,001

PUMP WITH SELF-CLEANING LINT FILTER

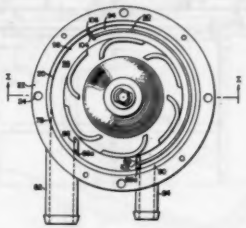
Robert L. Heldreth, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 19, 1972, Ser. No. 273,257

Int. Cl. B01d *35/22, 35/02*

U.S. Cl. 210—167 **7 Claims**

The invention provides a bi-directional single-impeller centrifugal pump having a filter screen enclosed within the pump housing and interposed, in the pump chamber, between the single pump inlet and one of two outlets defined in the housing for filtering the fluid pumped through the one outlet in response to the impeller rotating in one direction. When the impeller is reversed to pump the fluid through the other outlet, the particles of lint etc., retained within the pump chamber by



the filter screen are then free to exit the pump as flushed therefrom by the fluid being pumped through the other outlet.

3,836,002

FILTER ELEMENTS

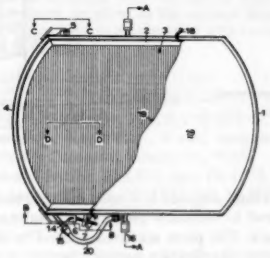
Colin M. Radford, Sandton, South Africa, assignor to Filtaflo (Proprietary) Limited

Filed June 1, 1973, Ser. No. 366,304

Claims priority, application South Africa, June 26, 1972, 72/4388

Int. Cl. B01d *29/04*

U.S. Cl. 210—232 **9 Claims**



A filter element comprising a panel and a surround to the panel, the surround being shaped for support in a supporting frame of a filter assembly. The panel embodies flow paths allowing fluid flow in the general direction of the plane of the panel and communicating with a drainage channel in the surround. The latter further embodies a caulking groove adapted to retain a sheet of filter material so that the latter overlies the panel.

3,836,003

ROTATING FEED TABLE FOR DISHWARE AND THE LIKE

Erik O. Vilen, La Grange Park, Ill., assignor to G. S. Blakeslee & Co., Chicago, Ill.

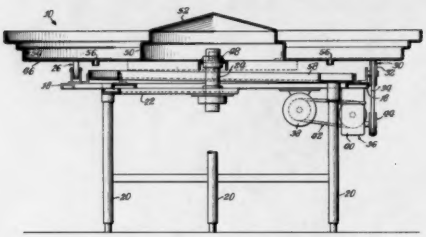
Filed Apr. 9, 1973, Ser. No. 349,204

Int. Cl. B01d *33/00*

U.S. Cl. 210—241 **6 Claims**

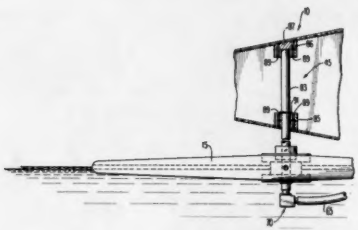
A generally horizontally disposed rotatable table top is supported at three points on a pair of idler roller means and

power driven roller means. Also, the table top is formed with a plurality of drain apertures, and a channel trough is located



below the table top for collecting liquids flowing through the apertures and directing the same to an outlet.

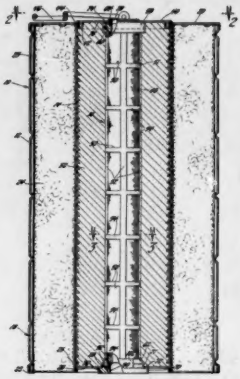
3,836,004
APPARATUS FOR RECOVERING OIL SUBSTANCES FROM THE SURFACE OF A BODY OF WATER
Uncas Favret, P.O. Box 73095, Metairie, La. 70003
Filed Dec. 7, 1972, Ser. No. 312,913
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 **20 Claims**



A buoyant float disposed in a body of water carries oil inlet ports at a level to withdraw primarily oily substance floating on the surface. The ports are sized relative to the size of a communicating oil collection suction chamber so as to permit impeded flow into the chamber and to aid in creation of a vortex like effect tending to withdraw fluid with a heavy concentration of oil. A remote pump connected to a portion of the float provides suction sufficient to withdraw the oily substance from the collection chamber. Where wind may tend to displace the oily substance, a sail-like wind reaction surface which is attached to the float, carries the float, and its oil inlet ports, with the displaced oily substance. The oil inlet ports are disposed so as to be carried preferably above the water level so that in the absence of an upper layer of oily substances, only air is withdrawn.

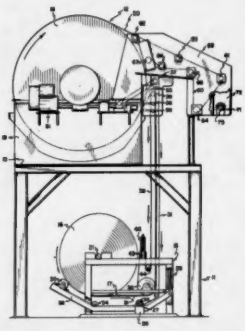
3,836,005
DRY CLEANING FILTER ELEMENT ASSEMBLY
Richard J. Bauer, Davison, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 13, 1973, Ser. No. 397,064
Int. Cl. B01d *27/08*
U.S. Cl. 210—266 **9 Claims**

A replaceable filter cartridge for a dry cleaner has concentric sheet metal cylinders and granular carbon held together between the ends of the cartridge by a plastic center tube. The center tube has a continuous plastic screen integrally molded with a grid of plastic ribs. The center tube has an annular shoulder on one end thereof sealingly biasing the outside of one end of the filter cartridge to retain the carbon and a metal ferrule molded into the other end thereof and crimped to the other end of the filter cartridge to lock the filter cartridge in



assembled relationship. The center tube is shorter than the sheet metal cylinders so that the dimensional stack-up maintains the center tube in tension to facilitate the sealing bias of the center tube throughout the useful life of the filter cartridge.

3,836,006
MEDIA FEED SYSTEM FOR A FILTRATION DEVICE
Steven S. Davis, Salt Lake City, Utah, assignor to Envirotech Corporation, Salt Lake City, Utah
Filed Mar. 16, 1973, Ser. No. 342,046
Int. Cl. B01d *33/00*
U.S. Cl. 210—387 **4 Claims**



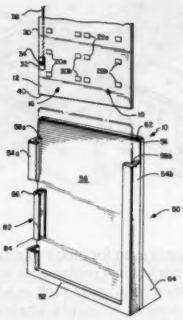
Apparatus for feeding a lightweight continuous sheet of disposable filter medium from a large supply roll onto a rotary drum vacuum filter. The feeder includes at least one pair of endless gripper belts which are trained about rollers in face-to-face relationship to grip the disposable medium therebetween to carry it from the supply roll to the filter. The roll of filter medium is mounted in a fixed cradle, a press roller is mounted on levers to continually press against the roll of paper as it unwinds and one of the gripper belts passes over the press roll against the paper roll to unwind the filter medium and carry it into the nip between the gripper belts for delivery to and release at a location adjacent the filter. The press roller and its associated belt are arranged to contact a relatively large area of the supply roll thus effecting rotation of the supply roll to assist in unwinding.

3,836,007

EYEGLASS DISPLAY HOLDER

David Rosenwein, 137 S. Harper Ave., Los Angeles, Calif. 90047

Continuation-in-part of Ser. No. 253,798, May 16, 1972, abandoned. This application Mar. 7, 1973, Ser. No. 338,820
Int. Cl. A47f 7/02; B65d 5/50; G08b 13/14
U.S. Cl. 211—13 4 Claims



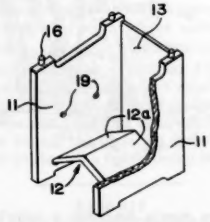
An eyeglass display card is provided wherein the temples of each pair of glasses are maintained in a folded configuration thereby preventing removal of the glasses from the display card without first removing the display card from a rack or frame which also serves to maintain the display card in a generally upright position, and means are provided on the card which coact with means on the rack or frame for sounding an alarm when the card is moved toward a card removal position.

3,836,008

WINE RACK

David M. Mraz, 90 Harrison Ave., Sausalito, Calif. 94965

Filed Mar. 19, 1973, Ser. No. 342,794
Int. Cl. A47b 73/00; A47f 7/00
U.S. Cl. 211—49 R 3 Claims



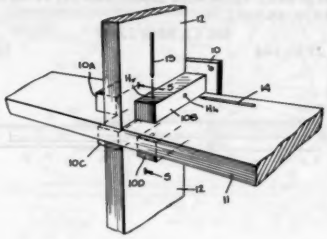
A rack for storing wine comprising modules that can be assembled to provide the capacity desired. Each module is a structure including spaced vertical side panels and a bottle supporting shelf between the panels which is in the form of an inverted V as viewed from the front of the structure. Cylindrical shaped bottles of various sizes are stably supported on the shelves.

3,836,009

SHELVING SYSTEM HAVING WALL-MOUNTED FIXTURES

Leonard Horowitz, 30 Joralemon St., Brooklyn, N.Y. 11201, and John Tam, 73 St. Marks Pl., New York, N.Y. 10003

Filed Feb. 23, 1973, Ser. No. 335,138
Int. Cl. A47f 5/08
U.S. Cl. 211—90 4 Claims



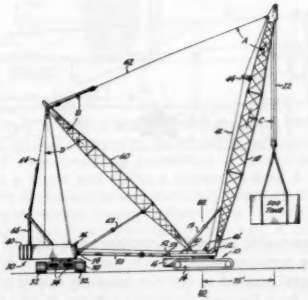
A shelving system formed by fixtures adapted to support both horizontal shelf pieces and vertical partition or divider pieces to make possible the erection of an assembly of open-ended shelves and enclosures in a variety of interesting and useful structural patterns. The fixtures are attachable to a wall at selected positions to provide support for the pieces. Each fixture is constituted by a flat mounting plate from which four cantilever arms project in an array defining a cruciform socket having a horizontal branch intersected by a vertical branch. Shelves are set up by bridging pieces between horizontally spaced fixtures, the ends of the pieces being received in the horizontal branches of the socket. Enclosures are formed by extending pieces between vertically spaced fixtures, the ends of the pieces being received in the vertical branches of the socket, the vertical pieces cooperating with horizontal pieces to define an enclosure.

3,836,010

COUNTER-BALANCED CRANE STRUCTURE

Neil F. Lampson, Kennewick, Wash., assignor to Riggers Manufacturing Company, Kennewick, Wash.

Continuation of Ser. No. 218,959, Jan. 19, 1972, abandoned. This application Aug. 27, 1973, Ser. No. 391,623
Int. Cl. B66c 23/74
U.S. Cl. 212—49 8 Claims



An earth-borne crane structure having a horizontally rotatable load platform for the superstructure is associated with a laterally displaced, weighty, self-propelled mobile unit by means of a stiff spreader link operable upon circumferential movement of said mobile unit relative to said crane structure to apply torque to the load platform and rotate the same and the load borne thereby from the superstructure.

3,836,011
EXTENSIBLE BOOM

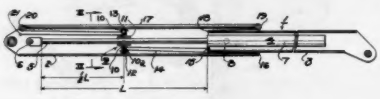
Teruya Sakamoto, 2482-70, Midori-cho, Sakaide; Takemi Nishimura, 230-14, Nonowe, Havikino, and Osamu Takarada, 1475 Omachi, Muro-cho, Kita-Gun, Kagawa, all of Japan

Division of Ser. No. 80,913, Oct. 15, 1970. This application Dec. 26, 1972, Ser. No. 318,608

Claims priority, application Japan, Jan. 31, 1970, 45-8718; Feb. 2, 1970, 45-9452

Int. Cl. B66c *23/62*

U.S. Cl. 212—144 13 Claims



In an extensible boom of the type having telescopically extensible boom members, a buckling-preventing method for hydraulic cylinder unit employed in the boom wherein an intermediate position of an optionally extended piston-rod of said cylinder unit is always supported with a buckling-preventing device having legs slidably or rotatably engaged with inner circumference of a boom member. The present invention further includes driving means for said buckling-preventing device which moves the device to said intermediate position of the piston-rod in connection with the operation of said cylinder unit.

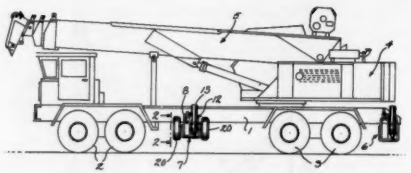
3,836,012
REMOVABLE OUTRIGGER ASSEMBLY WITH ROTATABLE JACK

Lyle D. Grider, New Berlin, Wis., and Robert J. Cleereman, Wooster, Ohio, assignors to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed July 9, 1973, Ser. No. 377,515

Int. Cl. B66c *23/62*

U.S. Cl. 212—145 6 Claims



A removable extensible outrigger assembly of the type including opposite vertical jacks has one jack rotatable to a horizontal position so that the assembly can be removed sidewardly from beneath a carrying vehicle. In one embodiment, the extensible outrigger beam is split into two sections that are normally locked together; and there is a cylindrical cam connection between the extension cylinder and outer section so that extension of the cylinder when the sections are unlocked causes the outer section and jack to be extended and rotated 90°. A second embodiment is similar, but the outer section is held against extension during rotation. In a third embodiment the jack is rotated pivotally using a slotted lever connection.

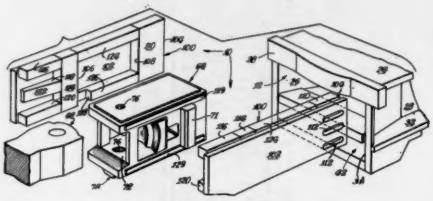
3,836,013
DRAFT GEAR POCKET ADAPTER

Vaughn T. Hawthorne, Mechanicsburg, Pa., assignor to Keystone Industries, Inc., Chicago, Ill.

Filed Dec. 13, 1972, Ser. No. 314,537

Int. Cl. B61g *9/04, 9/20*

U.S. Cl. 213—54 14 Claims



Adapter structure is used for modifying an existing, relatively large draft gear pocket in a railroad car to receive a relatively smaller replacement draft gear such as a hydraulic cushioning device. The adapter structure changes the shape and reduces the size of the pocket, provides stop means for limiting the travel of a movable portion of the replacement device, guides the movable portion as it slides in the pocket, and holds in position one end of a fixed portion of the replacement device.

3,836,014
VEHICLE LIFTING DEVICE

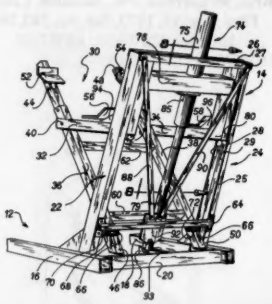
Anders Johansson, Laval, Quebec, Canada, assignor to Tor Johansson, Saltsjo-Duvnas, Sweden

Filed Sept. 15, 1972, Ser. No. 289,619

Claims priority, application Canada, Oct. 15, 1971, 125297

Int. Cl. B23g *3/18*

U.S. Cl. 214—1 A 11 Claims



The disclosure herein describes a vehicle lifting device which comprises a supporting frame, consisting of a base portion and of an upright portion, and a lifting frame consisting of two pairs of load arms which are pivotally connected to one another so as to provide relative movement therebetween as the lifting frame is raised. Actuator means are provided for causing the vertical movement of the lifting frame, and abutment means are mounted on the upright portion of the supporting frame for causing the pivotal movement of one pair of load arms relative to the other pair. The above arrangement enables a workman to have access to all parts of the underbody of the vehicle.

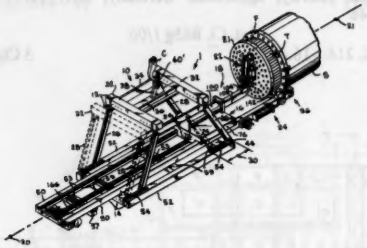
3,836,015

TUBE BUNDLE EXTRACTOR

Bobby J. Travis, 345 Mayhaw St., Vidor, Tex. 77662

Filed Mar. 29, 1973, Ser. No. 345,854

U.S. Cl. 214—1 P **14 Claims**



A tube bundle pulling or pushing mechanism consisting of an elongated framework adapted to be suspended from a crane hook and including a pair of rails which support the tube bundle and a car movable along the rails to pull or push the bundle. The framework consists of two parts shiftable with respect to one another, one part being a base frame including the rails, crossbeams supporting the rails and extending to either side of them, and a pair of longitudinally extending outrigger beams joining the ends of the crossbeams. The outrigger beams are holow, and slidable within each is a link beam having ears at both ends projecting upwardly through longitudinal slots in the outrigger beam.

The sliding beam belongs to the second part of the framework, the cradle, which further includes vertical tension bars joining the four ears at their lower ends and connected to a rectangular superstructure at their upper ends. The superstructure also includes a brace supporting an eye member which receives a crane hook. A pair of linear actuators disposed on the outrigger beams and having their pistons connected to the sliding beams permits the cradle to be moved relative to the base frame.

Also disclosed are novel means for connecting a pulling member which is offset from the center of a U-tubes to the end sheet of such bundle through a cluster of holes at the center of the end sheet; novel and remotely controlled means for both aligning the extractor with the heat exchanger shell and securing abutting ends of the two structures together against vertical loads; novel means for clamping such two ends together to prevent relative longitudinal movement; improved means for adjusting the width of the extractor to accommodate tube bundles of various diameters; new and improved means for remotely and safely controlling a set of dogs which depend from a movable car and selectively interlock the car with the base frame; and a plurality of auxiliary power means for moving the car along the rails relatively rapidly, after the prime mover on the car has done the major job of breaking loose from a heat exchanger a tightly fitting bundle of tubes.

3,836,016

APPARATUS FOR THE TRANSPORT AND INTERMEDIATE STORAGE OF PANEL SUPPORTS

Egon Saufhaus, Leutzel-Wiebelsbach, Germany, assignor to Carl Schenck Maschinenfabrik GmbH, Darmstadt, Germany

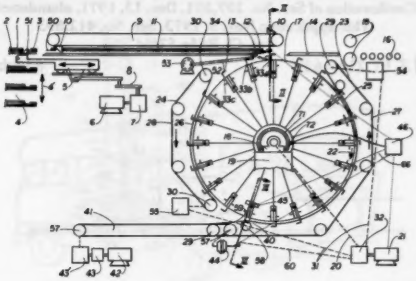
Filed July 23, 1973, Ser. No. 381,514

Claims priority, application Germany, July 27, 1972, 2236937

Int. Cl. B25j *15/04*

U.S. Cl. 214—1 B **10 Claims**

A system for the separation of panel supports and panels in the production of panels, provides panel supports having head rods to which flexible sieve like members are affixed for supporting the panels. A tiltable platform releases head rods supported thereby onto a rotatable drum having a plurality of clamping positions. The drum is also provided with a transfer station for releasing the clamping means to transfer the head rods and their respective sieve support members to a transfer belt. Control means are provided, whereby panel supports received at the platform are immediately transferred to the drum, and the panel supports are stored on the drum until called for in the manufacturing process, whereupon they are transferred from the drum at the transfer station.



3,836,017

APPARATUS FOR TRANSFERRING ARTICLES BETWEEN A CONVEYOR AND A STACK

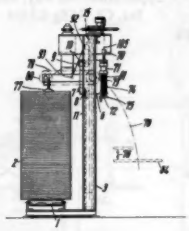
Gerd Bargstedt, Wischhafenersand 91, 2161 Drochtersen, Germany

Filed June 13, 1972, Ser. No. 262,285

Claims priority, application Germany, June 15, 1971, 2129576

Int. Cl. B65g *57/04*

U.S. Cl. 214—6 FS **15 Claims**

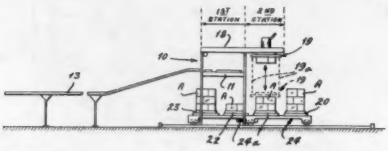


The conveyor is disposed on a predetermined level. The height of the stack is changed by the transfer of articles by said apparatus. Pivotal mounting means are vertically movably mounted on a frame and define a horizontal axis. A rocker arm assembly is pivoted to said mounting means on said axis for a rocking movement through substantially 180° and has an outer end which is remote from said pivotal axis. A gripper is carried by said rocker arm assembly at said outer end and adapted to hold articles. Vertical drive means are provided to adjust said pivotal axis in height during a rocking movement of said rocker arm assembly. Rocking drive means cooperate with said pivotal mounting means to impart to said rocker arm assembly a pivotal movement through 180°. connecting means are connected between said vertical drive means and said rocking drive means and serve to impart to said rocker arm assembly a rocking movement in dependence on the vertical movement of said pivotal mounting means. Means are provided to define a reference level which is spaced a predetermined vertical distance above said stack.

3,836,018
DISCRETE ARTICLE PALLETIZING AND DEPALLETIZING APPARATUS

George J. Dawson, Creve Coeur; Kenneth O. Hannum, St. Peters, both of Mo., and Gerald L. Himmelman, Moorestown, N.J., assignors to Alvey, Inc., St. Louis, Mo.

Continuation of Ser. No. 207,311, Dec. 13, 1971, abandoned.
This application Nov. 5, 1973, Ser. No. 412,693
Int. Cl. B65g 57/04
U.S. Cl. 214—6 FS 6 Claims

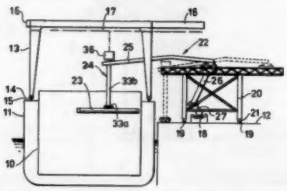


A method of creating or reducing palletized discrete articles by a suction head which is operable to engage one or more articles forming a layer and transporting the layer of articles onto or off of a pallet or slip sheet, and to a method of handling discrete articles from a plurality of sources of articles of the same or of different characteristics or from a conveyor handling a common product so as to build up palletized stacks thereof with one suction head and a multiple station carriage for pallets or slip sheets working in cooperation with the head. This invention also relates to apparatus for carrying out the method thereof as above defined.

3,836,019
ASSEMBLY FOR UNLOADING POWDERED OR SIMILAR MATERIAL FROM A SHIP'S HOLD

Per Tybring Aralt, Hop, Norway, assignor to Kristian G. Jebsen, Bergen, Norway

Filed Mar. 5, 1973, Ser. No. 338,241
Claims priority, application Norway, Mar. 8, 1972, 728/72
Int. Cl. B65g 63/04
U.S. Cl. 214—14 14 Claims

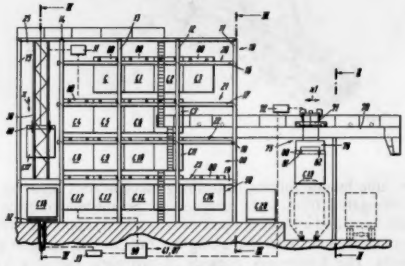


An assembly for unloading powdered material and the like from a ship's hold which comprises three conveyors and a delivery pipe linked to each other about mutually parallel horizontal axes. The delivery pipe is stationarily positioned relative to the conveyors for downwardly receiving the material from a third conveyor. The conveyors and delivery pipe together with a supply head for feeding the material to a first conveyor provide a dust-tight, closed passage for the powdered material. The supply head houses screw conveyors adapted to transfer the material to a portion of said supply head from which screw conveyors of the first conveyor directly extend. The point of linkage between first and second conveyors is suspended from and regulatable vertically and horizontally by way of ship crane means while the point of linkage between second and third conveyors is supported outside the ship on elevated guide means extending transversely of the direction of the ship.

3,836,020
CONTAINER/CARGO HANDLING PLANT

Harry Lassig, Hamburg-Schenefeld, Germany, assignor to Firma Fordertechnik Hamburg Harry Lassig, Hamburg-Schenefeld, Germany

Filed Mar. 12, 1973, Ser. No. 339,773
Claims priority, application Germany, Nov. 11, 1972, 2255346
Int. Cl. B65g 1/06
U.S. Cl. 214—16.4 C 3 Claims

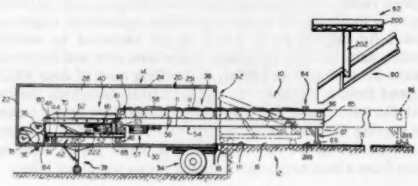


A container/cargo handling plant allowing full automatic loading and/or unloading of containers with pallet cargo or discrete cargo or the like, assembling of containers in an assembly area or within various levels of a frame structure, and further adapted to semi-automatic or fully automated loading or unloading of empty or freight-holding containers onto or respectively from transportation means of any type, as well as storing such containers. The plant essentially includes a frame structure having several levels, hoisting and conveyor means, a loading/unloading apparatus, drive and control means.

3,836,021
APPARATUS FOR HANDLING MAIL BAGS

Joseph E. McWilliams, 1345 Canterbury Ln., Glenview, Ill. 60025

Filed Oct. 5, 1972, Ser. No. 295,261
Int. Cl. B65g 57/12, 67/08
U.S. Cl. 214—41 10 Claims



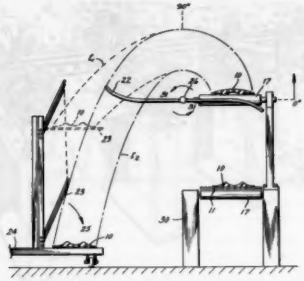
Apparatus for loading mail bags from a loading dock, equipped with a chute from which the bags are gravity discharged, into an end loading highway vehicle, comprising a mail bag storing conveyor that receives the bags as they are dropped at random from the chute, and is activated by sensing device when the bags have reached a predetermined level on the conveyor to shift the bags already loaded so that further bags may be applied to the storage conveyor, with the storage conveyor being equipped with sensing devices at its ends that are connected with means to signal the operator when the storage conveyor is fully loaded so that it may be unloaded.

3,836,022

MECHANIZED TREAD BOOKING APPARATUS

Horst O. H. Ims, Waterloo, Ontario, Canada, assignor to Uniroyal, Ltd., Montreal, Quebec, Canada

Filed Oct. 20, 1972, Ser. No. 299,493
Claims priority, application Canada, Aug. 29, 1972, 150441
Int. Cl. B65g 67/04
U.S. Cl. 214—41 11 Claims



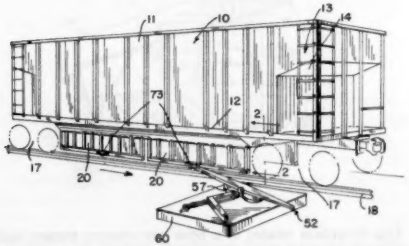
A method and apparatus for mechanically booking tire treads. Tire treads sequentially advancing along a first conveyor are fed to a rotating pick-up drum, where they are lifted onto a second conveyor. The second conveyor has rotary arms disposed thereon that project the tread through space onto the leaves of a tread truck. The tread truck includes an indexing unit that individually indexes each of the separate tread truck leaves into a horizontal position to receive a tread thereon. Means is provided to progressively vary the trajectories of the projected treads in order to insure that the treads will be deposited on the proper truck leaves in undistorted condition.

3,836,023

CLOSURE MECHANISM FOR BOTTOM DUMP HOPPER CAR DOORS

William H. Peterson, Homewood, Ill., and Valerian S. Bochenek, Jr., Hammond, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Nov. 2, 1973, Ser. No. 412,390
Int. Cl. B61d 7/30
U.S. Cl. 214—63 10 Claims



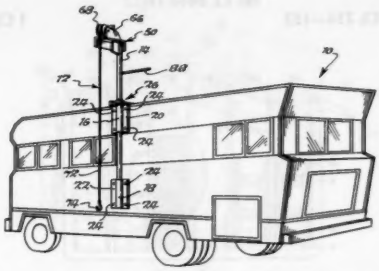
A side of track closure mechanism is provided for engaging and exerting an inwardly directed lateral thrust against bottom dump doors in their open position for hingedly moving the doors inwardly into a closed position. The actuating mechanism includes a rotating lever having actuating means at opposite ends thereof and includes means for positioning the actuating means sequentially in position so that they engage the doors of dump cars movable on a track alongside the closure mechanism.

3,836,024

LIFTING APPARATUS

Michael J. Mantino, 22 S. Bend Ln., Lakeview, N.Y. 14085

Filed Feb. 15, 1973, Ser. No. 332,714
Int. Cl. B60p 1/54
U.S. Cl. 214—75 H 9 Claims



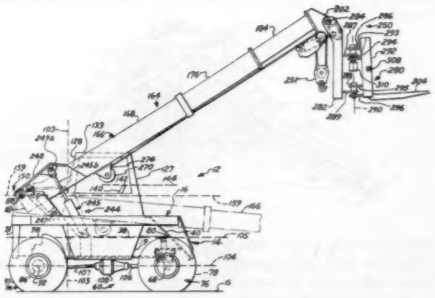
A lifting apparatus is mounted directly on a vehicle for elevating relatively heavy loads from a lower level onto the roof of the vehicle. The lifting apparatus includes a hoist mounted on the upper end of a reciprocable support tube telescopically mounted in a receiving tube rigidly secured to the vehicle. The support tube is axially adjustable to vary the effective length thereof above the roof of the vehicle and is rotatable relative to its mounting to swing a lifted load onto the roof of the vehicle for storage during transport.

3,836,025

MATERIAL-HANDLING MACHINE

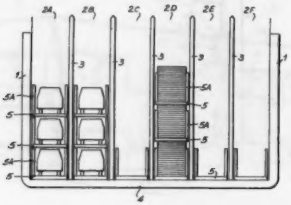
Eugene D. Olson, Wausau, and Salvatore F. Aiello, Racine, both of Wis., assignors to Loed Corporation, Wausau, Wis.

Filed May 21, 1973, Ser. No. 362,199
Int. Cl. B60p 1/48
U.S. Cl. 214—77 R 14 Claims



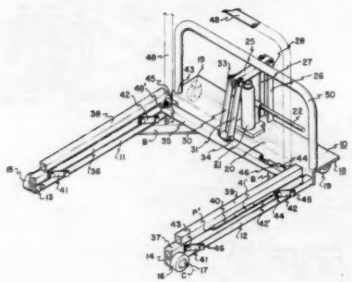
A self-propelled, low profile material-handling vehicle mounted on a pair of front wheels and a pair of rear wheels. The vehicle supports an extendible boom rotatable around a horizontal pivot axis that is substantially located above the rear wheels. A cab for a driver is located on one side of the boom, and a load-carrying platform is located on the side of the boom opposite the cab. A well located in the vehicle body between the cab and the load-carrying platform is positioned lower than the pivot axis of the boom and is arranged to receive the boom when it is pivoted downward toward the front wheels so that a load can be maneuvered below grade level. The pivot axis is vertically located above the top of the wheels and below the top of a steering wheel located within the cab so that the driver's vision is substantially unobstructed when a load is carried by the boom close to the grade level.

3,836,026
METHOD OF TRANSPORTING SHIP CARGO
Per-Erik Arnold Peterson, Taby, Sweden, assignor to Rederiaktiebolaget Nordstjernan, Stockholm, Sweden
Continuation of Ser. No. 105,892, Jan. 12, 1971, abandoned.
This application Feb. 9, 1973, Ser. No. 331,250
Claims priority, application Sweden, Jan. 13, 1970, 372/70
Int. Cl. B65d 19/22
U.S. Cl. 214—152 1 Claim



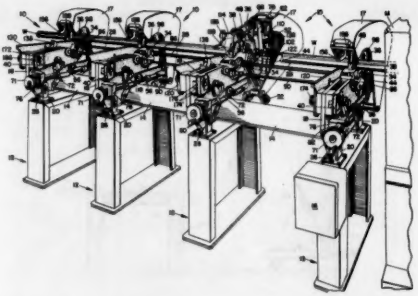
A method and system of transporting goods in alternative transport in vertically stacked relationship, in which the goods are positioned on platforms having upright support posts, superimposed platforms being supported on said posts when supporting light, damageable voluminous goods, and adapted to be alternatively filled with heavy, non-compressible and non-damageable bulk goods extending above the support posts of superimposed platforms whereby the load of the entire goods is transmitted through the cargo.

3,836,027
TRUCK WHEEL DOLLY
Clive D. Gardner, 1188 Lorrain Dr., Salt Lake City, Utah 84106
Filed Apr. 2, 1973, Ser. No. 346,916
Int. Cl. B60b 29/00
U.S. Cl. 214—331 5 Claims



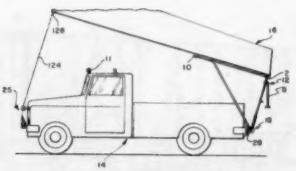
A truck wheel dolly easily implaced and adjustable for use in lifting, transporting and remounting heavy truck wheels and tires, and this with a mimimum of effort or difficulty as such wheels are lifted, removed and replaced relative to the wheel axle. The dolly includes its own self-contained hydraulic jack with lever and like coupling means for lifting an elevatable frame supported by links to a base frame. The elevatable frame includes hinged support bars or means supplying versatility in use of the equipment. Wheel support bar means as well as auxiliary spacer bars are provided. Wheels and casters are supplied so as to provide fine adjustment in placement of the dolly preparatory to use. Support rail means is provided the lift frame so that a wheel may rest thereagainst and be supported thereby so that oil seals and the like at journaling areas will not be deleteriously disturbed.

3,836,028
FEED APPARATUS
Richard A. Austin, West Springfield, Mass., assignor to Valley Bank and Trust Company, Springfield, Mass.
Filed July 31, 1972, Ser. No. 276,582
Int. Cl. B65h 51/06
U.S. Cl. 214—338 7 Claims



Apparatus for feeding bar or tube stock to such as a lathe or screw machine or the like for machining operations comprising, a plurality of feed stations, each feed station performing the functions of: maintaining constant definition of a center line common to all feed stations and to the machine into which the stock is being fed; imparting rotary motion to the stock by means of a driven roll; imparting translatory motion to the stock by skewing the driven roll and/or an idler roll; and loading consecutive bars of stock into a feed position.

3,836,029
BOAT CONVEYANCE MEANS
Burnell A. Ruedebusch, 3200 S.E. Blvd., Wichita, Kans.
Filed Jan. 10, 1973, Ser. No. 322,442
Int. Cl. B60r 9/00
U.S. Cl. 214—450 9 Claims



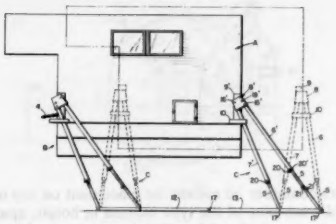
This invention relates to a boat conveyance means readily attachable to a vehicle structure having means thereon to grasp a boat structure in its normal usage condition and elevate and invert the same to a top portion of the supporting vehicle structure. More specifically, this invention is a boat conveyance means having a basic support means connectable to a vehicle structure and operable to be attached to a boat structure; an intermediate support and anchor means connected to the vehicle structure having means thereupon to anchor the boat structure in the conveyance position; and a winch means mounted on the vehicle structure and operable to raise and lower the boat structure to and from the vehicle structure.

3,836,030

CAMPER LOADING AND UNLOADING DEVICE

Albert S. Timmons, 5477 LaFayette, Newark, Calif. 94560

Filed Nov. 13, 1972, Ser. No. 305,880
Int. Cl. B60p 1/64
U.S. Cl. 214—515 6 Claims



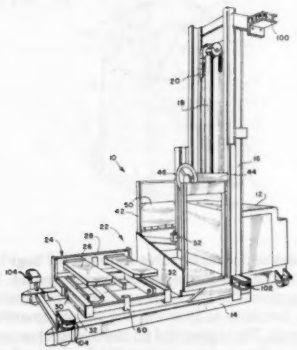
The invention relates to a support structure adapted to be secured to a camper to facilitate the loading and unloading of the same onto and off of a truck bed.

3,836,031

MATERIAL HANDLING TRUCK APPARATUS

Alexander Weisker, Milford, and Raymond L. Smith, Jr., Southbury, both of Conn., assignors to C & M Manufacturing Company, Inc., Bethesda, Md.

Continuation of Ser. No. 22,436, March 25, 1970, abandoned.
This application June 1, 1972, Ser. No. 258,889
Int. Cl. B66f 9/14
U.S. Cl. 214—730 9 Claims



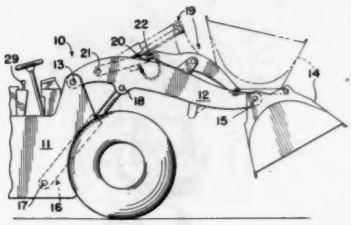
A narrow aisle stacker attachment for a material handling truck has a mast and carriage and laterally extensible carrier for picking up and depositing loads in a storage rack. Horizontally extensible supports near the vertically movable carriage balance side moments. A set switch prevents excessive upward carriage movement when a carriage-riding operator is standing. The base has rollers which guide the truck in the narrow aisle. Rollers on the mast guide and steady the mast in aisles. A trolley pick-up automatically connects to a bus bar when the truck enters an aisle for operating the normally battery driven truck from an external power source during in-aisle movement.

3,836,032

BUCKET POSITIONER FOR LOADERS

Timothy D. Geier, Oswego, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 24, 1973, Ser. No. 326,372
Int. Cl. E02f 3/87
U.S. Cl. 214—764 6 Claims



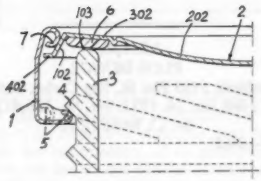
A loader comprises a pair of lift arms pivotally mounted on a tractor and bucket pivotally mounted on the forward ends of the lift arms. A tilt linkage is operatively connected between the lift arms and the bucket to selectively position the bucket for various earth working operations. The tilt linkage comprises a hydraulic cylinder adapted to be selectively actuated manually by a three-position, four-way directional control valve. An extensible rod of the cylinder is mechanically connected by a cable to an air valve which opens to extend a pilot piston which in turn actuates the directional control valve upon extension of the rod.

3,836,033

CLOSURE CAP

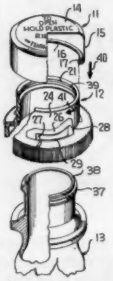
Armando Podesta, 52, Via Eustachi, Milan, Italy (21100)

Filed Mar. 19, 1973, Ser. No. 342,408
Claims priority, application Italy, Mar. 23, 1972, 12554/72
Int. Cl. B65d 41/04
U.S. Cl. 215—7 5 Claims



A metal cap for closing a container, e.g. a glass container for foodstuffs, of the kind comprising a cap base extending over the container mouth and beyond its outer edge and a separate encircling cap skirt secured to the container by a screw or bayonet connection and engaging over the edge of the cap base; the cap base being originally curved inwards, but being forced into an outward curve by the anchoring forces acting on its edge when the skirt is secured over it and subsequently being curved inwards again by reduced pressure formed in the container. Loss of pressure is thus indicated by a return to the outwardly curved condition. The region of the cap base projecting beyond the outer edge of the container mouth has a downwardly widening conical edge portion engaged by a rolled-in bead on the upper end of the cap skirt. The adjacent portion of the cap skirt may be conically tapered, and the conical edge portion of the cap base may terminate in an out-turned stiffening flange. The circle of contact preferably lies slightly below the plane of the container mouth. Good engagement and sealing are thereby obtained as well as reliable inward and outward curving of the cap base.

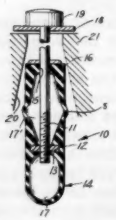
3,836,034
SAFETY CLOSURE, FITMENT AND FINISH
Frank H. Lecinski, Jr., Harwood Heights, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed June 6, 1972, Ser. No. 260,105
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **25 Claims**



This disclosure relates to a novel safety closure combination in which a generally annular fitment is secured to a container finish by an interlocked bead and groove defining a slip fit, and a closure secured to the fitment by cooperative threads and lugs with means resistive to rotation of the closure relative to the fitment in an opening direction whereby upon the application of opening force to the closure tending to rotate the same the closure and fitment will rotate in unison thereby precluding inadvertent access to the container contents.

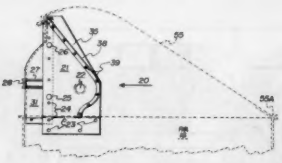
The closure and fitment are preassembled prior to being interlocked upon the container finish, and the fitment includes an interior tapered lead surface which permits the fitment to flex radially outwardly whereby the bead thereof can pass inwardly of the closure beyond the lugs and into the fitment groove.

3,836,035
PLUG DEVICE
Rashid I. Simbirdi, 1185 Elm St., San Carlos, Calif. 94070
Filed Jan. 24, 1973, Ser. No. 326,413
Int. Cl. B65d *39/12*
U.S. Cl. 220—24.5 **3 Claims**



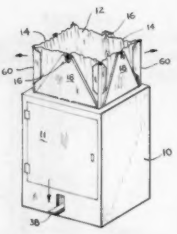
A plug device for closing the openings in tanks and other structures. This device consists primarily of an expandable resilient capsule with threaded shaft means and threaded flange nut means for working in conjunction with each other, to expand the resilient capsule in order that the opening of the tank or other structure will be tightly sealed.

3,836,036
TRASH CONTAINER LID SYSTEM
Allan M. Hodge, 5852 Lomond Dr., San Diego, Calif. 92120
Filed Feb. 8, 1973, Ser. No. 330,569
Int. Cl. B65d *43/15, 51/10*
U.S. Cl. 220—32 **7 Claims**



A trash container lid system for placement on top of large industrial trash bins of the type utilized in hotels, apartment houses, etc., in which a lid section having a raised back portion is axially and rotatably coupled to the trash bin via an elongated aperture allowing a rear bottom curved surface of the lid assuming a stabilized partially open position, the extreme back portion of the lid carrying a counterweight throughout a predetermined arch for ease in opening, and the contacting surfaces between the trash bin and the lid having a vapor seal, the lid assembly consisting of a metal frame carrying a removable plastic liner therein.

3,836,037
HOLDING AND SUPPORT DEVICE FOR REPLACEABLE BAGS HAVING A SEGMENTED LID
Thomas R. Bass, 21 Melody Dr., Colonia, N.J. 07067
Filed Dec. 18, 1972, Ser. No. 316,416
Int. Cl. B65d *43/18, 43/26, 25/16*
U.S. Cl. 220—35 **9 Claims**

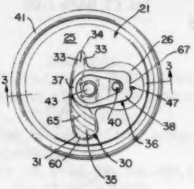


A support device for replaceable soft material bags in which the bag is attached to a foot-operated segmented lid. The lid, when open, spreads the bag to its extreme open position and, when closed, functions to close the bag and to somewhat compact its contents. The segmented lid closure mechanism holds, pre-positions, and provides a sanitary lid for the trash receptacle bag.

3,836,038
EASY-OPEN WALL
Daniel F. Cudzik, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Sept. 28, 1972, Ser. No. 293,115
Int. Cl. B65d *17/00*
U.S. Cl. 220—48 **33 Claims**

An easy-open wall is provided for a container and comprises an approximately U-shaped score line in such wall with the score line having a bight and a pair of extensions extending from the bight and terminating in spaced ends having a por-

tion of the wall therebetween. The score line defines a panel which is completely severable from the wall along the bight and along parts of the extensions adjoining the bight while remaining attached at the wall portion to define an opening in the wall. A non-detachable tab is attached substantially flatly



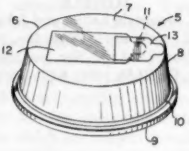
against the wall and the tab has a forward portion which overlies part of the panel and has a rear portion. The rear portion is easily grasped and lifted to urge the forward portion against the panel to thereby sever such panel and move it within the container with the wall portion holding the panel securely to the wall.

3,836,039

EASY-OPENING MEANS FOR PLASTIC PACKAGES

Oscar E. Seiferth; Glenn M. Austin, and Daniel C. Grace, all of Madison, Wis., assignors to Oscar Mayer & Co., Inc., Madison, Wis.

Filed July 31, 1972, Ser. No. 276,408
Int. Cl. B65d *17/20*
U.S. Cl. 220—54 **10 Claims**



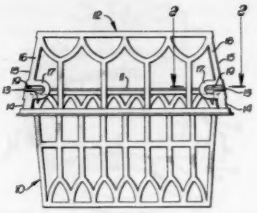
An easy-opening means is provided in rigid or semi-rigid plastic sheet material forming at least a substantial portion of one of the walls of a container component or package. The easy-opening means comprises a lift tab which is integrally formed from the plastic sheet material and is completely separated from the material except where it is integrally attached at one end or side of the tab. A score line or lines are formed on the interior only of the sheet material without appreciably disturbing the exterior surface in any way and with one end of each score line joining one end of the line along which the tab is completely severed from the sheet material. The tab is covered on the exterior with a patch of pressure sensitive tape so as to hermetically seal the easy-opening means where the tab is completely separated from the sheet material. On lifting the patch of tape the lift tab is or may be readily lifted and on further lifting thereof the plastic sheet material may be separated along each interior score line or lines.

3,836,040

BASKET PROTECTIVE COVER

Derrick Paine, Jr., 1295 S. Los Angeles St., Glendale, Calif. 91209, and Thomas Paine, San Marino, Calif.

Filed Oct. 24, 1972, Ser. No. 300,192
Int. Cl. B65d *43/10*
U.S. Cl. 220—60 R **2 Claims**



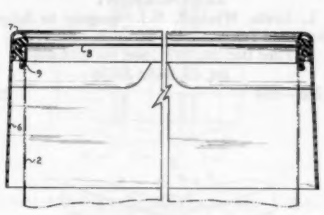
A basket-like, open-work cover, generally rectangular, adapted to snap onto the top of a conventional produce basket to protect the contents of the basket.

3,836,041

CONTAINER SKIRT

David F. Allgeyer, Conway, Ark., assignor to UMC Industries, Inc., New York, N.Y.

Filed June 14, 1972, Ser. No. 262,699
Int. Cl. B65d *25/00*
U.S. Cl. 220—85 R **12 Claims**



In a container for holding frozen food products, such as ice cream or the like, a skirt means is provided for snug seating upon the top of its respective container, and firmly held in place through the intermediary of an elastomeric ring like member, while the downward portion of each skirt is multi-sided, preferably of square design, so that like skirts of adjacent containers can be contiguously positioned together in proximity to provide a platform like surface to prevent any food droppings from falling below the composite skirts and containers. A cabinet incorporating a series of brackets upon its interior walls is designed to provide for snug positioning of said skirts and containers together, and through a transparent sliding lid provided on the cabinet, the food laden containers, in addition to the collection of adjacent skirts and the surface they form may be conveniently viewed.

3,836,042

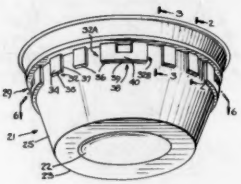
NESTABLE CONTAINER

Albert C. Petitto, Hudson, Mass., assignor to Foster Grant Co., Inc., Leominster, Del.

Continuation of Ser. No. 58,483, July 27, 1970, abandoned. This application Apr. 3, 1972, Ser. No. 240,853
Int. Cl. B65d *21/02*
U.S. Cl. 220—97 C **8 Claims**

The subject matter is a container adapted for nesting with containers of like shape and configuration which will not jam

into an adjacent nested container. The container is provided with a novel stacking skirt having a plurality of stacking lugs spaced around its circumference and offset radially outwardly. The lugs may be of various shapes, e.g. rectangular or sinusoidal. The skirt and stacking lugs terminate at their upper ends in an internal upper stacking shelf. The bottom portions of the lugs form an interrupted external stacking shelf on each



container which engage the internal stacking shelf of a container below in a stack of such containers. To provide positive resistance against jamming, additional stacking shelf members on the skirt alter the configuration of either or both of the internal or external stacking shelves and provide additional constantly available stacking surface at selected portions of said stacking shelves.

3,836,043

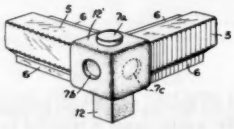
TRANSIT/COMBINATION CASE SHOCK MOUNT ARRANGEMENT

Herbert L. Levin, Wyckoff, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Dec. 30, 1971, Ser. No. 214,008

Int. Cl. B65d *25/26*

U.S. Cl. 206—504 **28 Claims**



This invention comprises several embodiments of multifunctional shock mounts for transit/cases. A resilient (e.g., rubber) molded corner bumper is either bonded to, or captivated along its edges by, a retainer shaped to be demountably coupled to a corner of the case body or cover. The resilient molded portion may additionally be provided with an outer metallic jacket to facilitate sliding and protection thereof, the outer jacket in turn being either bonded to the resilient portion or being captivated along with the rubber by the retainer. The rubber bumper and its associated outer metallic jacket are extended in a cubical shaped center portion beyond the case outer dimensions and hardware, serving to recess same for additional protection. The resilient molded bumper may be in the form of a two or three-legged piece with the legs being retained by the case outer structural members. Additional features such as male and female stacking features, sloped edges to facilitate sliding, and tie-rings are provided. Shaped coring holes or cast slots or cross ribs in the resilient portion provide for the equivalent spring constant in all dropping and handling modes to be closely equal to the spring constant of the weight of the case and contents on a corner support.

3,836,044

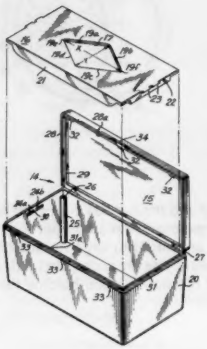
BULK PACKAGE INCORPORATING MOVABLE DISPENSER INSERT FOR INDIVIDUAL DISPENSING OF SUBSTANTIALLY WET SHEETS FROM STACK

Robert F. Tilp, Morristown; William E. Fitzpatrick, Wyckoff, and Robert B. Cubitt, Ramsey, all of N.J., assignors to Rapid-American Corporation, New York, N.Y.

Filed July 28, 1972, Ser. No. 274,135

Int. Cl. B65h *1/00*

U.S. Cl. 221—55 **10 Claims**



A bulk package for individually dispensing substantially wet sheets from a stack of such sheets, including a container removably receiving the stack and having a cover which, when closed, forms a substantially moisture-proof seal between the container and the atmosphere, and a barrier member overlying the stack of wet sheets and interposed between the stack and the cover and having a sheet restricting opening therein through which the wet sheets may be individually and successively removed when the cover is opened.

3,836,045

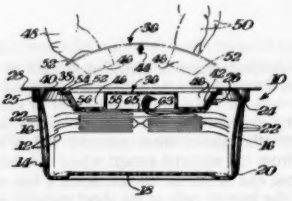
DISPENSING CONTAINER OF FOLDED DISPOSABLE TOWELS

Kenneth W. Duhy, Mountain Lakes, and John Jones, Jr., Short Hills, both of N.J., assignors to Pfizer Inc., New York, N.Y.

Filed Nov. 14, 1972, Ser. No. 306,461

Int. Cl. B65h *1/04;* **A47k** *10/42*

U.S. Cl. 221—63 **14 Claims**



A stack of small liquid-saturated folded disposable towels is sealed within a disposable container under a cover sheet, which protects and preserves the contents during storage prior to use. When the cover sheet is stripped from the peripheral flange to which it is attached, by grasping a loose tip over a depressed corner of the flange, it exposes a removable lid having a pair of opposite edges flexibly inserted under overhanging projections on a framing ridge on a dished panel, which is secured to a shelf within the rim of the receptacle. Towels are

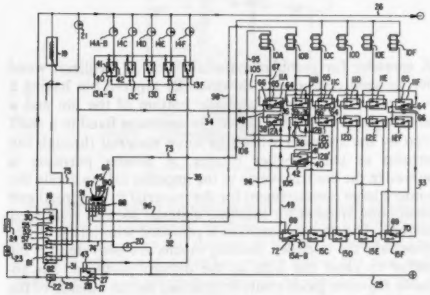
dispensed through a lobular cross-shaped aperture in the center of the dished panel, which is surrounded by a flat margin joined by sloped walls to a ledge under the framing ridge, which provides a supporting surface for the edges of the lid. The sides of the container are concavely indented and vertically ridged to stiffen and decorate them. The bottom is also inwardly dished for the same purposes.

3,836,046

CIRCUIT FOR MULTI-COLUMN VENDING MACHINES HAVING COLUMNS ARRANGED FOR CONJOINT OPERATION

Raymond D. Bowman, Ringgold, Ga., assignor to Cavalier Corporation, Chattanooga, Tenn.

Filed Oct. 24, 1973, Ser. No. 409,161
Int. Cl. G07f *11/08*
U.S. Cl. 221—67 **14 Claims**



A coin operated multi-column vending machine embodies a separate dispensing actuator for each column of product units and associated circuit components including plural customer-operated product selector switches. Two product unit columns are placed under control of an alternator relay and a common selector switch for conjoint operation. Alternate dispensing of products from one of the two product unit columns is effected in response to each actuation of the common selector switch. The invention is particularly applicable to vending machines for dispensing carbonated soft drinks or other food products which are subject to staleness if left too long in the machine and allows for easy modification and conversion of existing multi-column vending machines and their associated control circuits in the field.

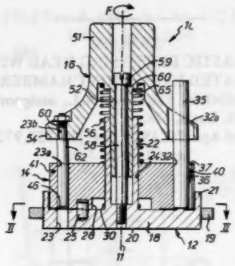
3,836,047

ANTIBIOTIC DISC DISTRIBUTORS

Charles Darpentigny, Igny; Michel Lesserteur, Viry Chatillon, and Daniel Lux, Bagneux, all of France, assignors to ANVAR Agence Nationale de Valorisation de la Recherche, Neuilly-Sur-Seine, France

Filed Aug. 23, 1973, Ser. No. 390,941
Claims priority, application France, Sept. 5, 1972, 72.31409; Feb. 9, 1973, 73.4627
Int. Cl. B65h *3/44*
U.S. Cl. 221—93 **21 Claims**

A distributor for the simultaneous deposition of a plurality of discs or pastilles on a surface in a predetermined configuration comprises a base in relation to which a tube carries drum is adapted to turn in order to effect the extraction and positioning of a respective disc in line with a plurality of axial passages in the base, and also an operating button carrying



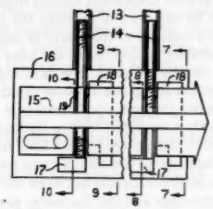
axial ejection rods the rotation of which causes the drum to turn and the pressure of which effects the simultaneous ejection of the discs through the said passages.

3,836,048

STUD ORIENTER

Charles Thomas Lowe, 5165 Torrey Rd., Flint, Mich. 48507

Filed Nov. 28, 1972, Ser. No. 296,140
Int. Cl. B65h *9/04*
U.S. Cl. 221—172 **5 Claims**



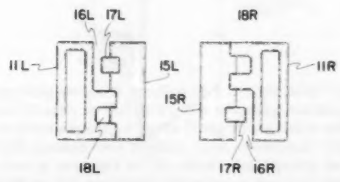
A stud orienter having only one moving part, a slide, with a plurality of compartments each of which accepts a single unoriented stud, the slide resting upon a body member which has a plurality of stud orienting cutouts, the slide transferring the studs across the body allowing each stud to drop through an orienting cutout threaded end upward in readiness to be pressed into a mating part.

3,836,049

CLASP

Lynwood Vincent Smith, Farmington, Conn., assignor to Gulf & Western Manufacturing Company (Eastern Group), New York, N.Y.

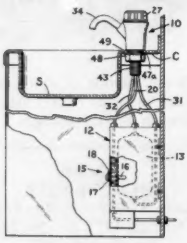
Filed July 12, 1973, Ser. No. 378,653
Int. Cl. A44b *17/00*
U.S. Cl. 24—201 R **1 Claim**



A two-piece clasp for securing a belt or half-belt in which each piece is substantially identical in structure and when two

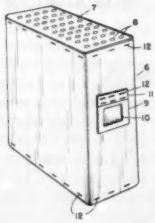
pieces are combined to form a clasp one piece is in reverse mirror image position with respect to the other. A dual latch, dual catch arrangement maintains the clasp in desired orientation when engaged.

3,836,050
REMOTE PLASTIC DISPENSING HEAD WITH FLUID LEVEL ACTUATED EXPANSION CHAMBER SHUT OFF
Richard C. Dreibelbis, Fairlawn, N.J., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Apr. 20, 1973, Ser. No. 352,972
Int. Cl. B67d *5/08*
U.S. Cl. 222—66 **22 Claims**



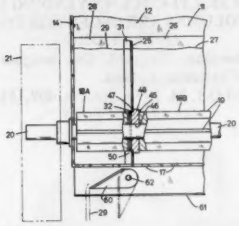
A remote dispensing head for use in a system operating at atmospheric pressure for dispensing heated fluid has a housing formed by a base having means thereon for connecting the dispensing head to a counter or like point of use, and an annular plastic body member connected to the base to form an expansion chamber in the housing, the housing may include valve means for controlling the flow of fluid from a given source to the dispensing system and a discharge means such as the spout operatively associated with a discharge passage in the base connected to the system to pass fluid from the system to the spout for discharge to use, and a cross passage means in the base provides communication between the lower portion of the expansion chamber and the discharge passage to permit expansion fluid to expand into the expansion chamber, and means operable responsive to the level of the expansion fluid in the expansion chamber will act to close off the cross passage means when the expansion fluid reaches a predetermined minimum level.

3,836,051
OUTDOOR SALT DISPENSER
Robert W. Schmechel, 3454 W. Wrightwood, Chicago, Ill. 60647
Filed Jan. 8, 1973, Ser. No. 322,062
Int. Cl. B67d *5/64*
U.S. Cl. 222—175 **5 Claims**



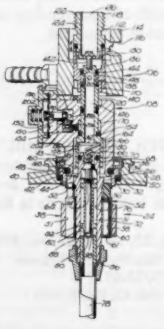
An outdoor salt dispenser, for snow and ice removal for use on sidewalks, driveways and the like, includes either a corrugated cardboard or plastic container with perforations in the top side and three handles, located one on each opposite side and one on the bottom.

3,836,052
MARKER LINE MEANS FOR SPREADER
Frank S. Chopieska, 903 Lakeview Dr., LaCrosse, Wis. 54601
Filed Sept. 13, 1972, Ser. No. 288,574
Int. Cl. A01c *15/12*
U.S. Cl. 222—177 **6 Claims**



A spreader for granular materials such as fertilizer, weed killer, or seed comprises a downwardly tapered bin having a row of adjustable apertures at the bottom of the bin and a bladed impeller in the bin above the apertures fixed to a shaft driven by the spreader wheels to force material through the apertures as the impeller rotates. A divider partition is mounted in the bin transverse to the impeller axis to divide the bin into a large compartment for the material to be spread and a small compartment for marking material such as powdered limestone. The divider partition is provided with a hole to accommodate the impeller. Sealing means are provided on the impeller to close the hole in the divider partition. An adjustably movable guide chute is attached on the outside of the bin to guide the flow of marking material.

3,836,053
LIQUID DISPENSING APPARATUS
Mack S. Johnston, 26 Hitching Post Dr., Rolling Hills, Calif. 90274
Continuation-in-part of Ser. No. 189,281, Oct. 14, 1971, Pat. No. 3,758,008. This application Aug. 3, 1973, Ser. No. 385,358The portion of the term of this patent subsequent to Sept. 11, 1990, has been disclaimed.
Int. Cl. B65d *83/00*
U.S. Cl. 222—400.7 **34 Claims**



Apparatus which is especially useful for dispensing beer from kegs and which includes a keg adapter and a tapper for

operative engagement therewith. The keg adapter has gas and liquid passageways containing normally closed valves, which when opened, permit compressed gas to be admitted to the keg and beer to be withdrawn therefrom, said valves being biased toward the closed position by actuators which contain permanent magnets. The tapper can be connected to a source of compressed gas and to a beer faucet and contains a tap rod, which, when manually actuated, seals the tapper to the adapter and interconnects the gas source and the faucet with the interior of the keg.

3,836,054

TONER DISPENSING APPARATUS

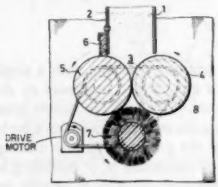
Klaus Peter Schon, 14, Rathenauplatz, Wiesbaden-Biebrich, Germany

Filed Oct. 19, 1972, Ser. No. 298,815

Claims priority, application Germany, Oct. 22, 1971, 2152592

Int. Cl. G01f *11/46*

U.S. Cl. 222—414 **8 Claims**



A toner dispensing apparatus including a toner supply container having a discharge opening obturated by two parallel rollers forming a nip and rotating in the same direction and at the same speed and a further roller below the two rollers which rotates at a speed in excess of the speed of the two rollers to remove toner from the two rollers. The roller rotating in the direction of the nip for toner supply has left and right hand helical grooves.

3,836,055

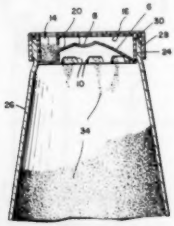
GRANULE DISPENSING REGULATOR

Peter C. Katzmark, 601 E. Anapamu, Santa Barbara, Calif. 93101, and George H. Lenea, 4237 Loma Rivera Ln., San Diego, Calif. 92110

Filed Mar. 22, 1973, Ser. No. 343,940

Int. Cl. G01f *11/26*

U.S. Cl. 222—427 **11 Claims**



A peripheral wall with two spaced partitions extending inwardly therefrom, a cone-shaped floor with a central aperture and peripheral holes, and a lid with an arcuate opening and a downwardly extending skirt comprise a granule dispensing regulator positionable in a container neck. The partitions and wall therebetween define a well which is primed by upending and uprighting the container. Granules are dispensed when the container is next upended.

3,836,056

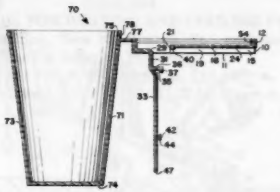
PIVOTED CLOSURE CONDIMENT DISPENSER

Harold T. Pehr, 3920 W. 96th St., Overland Park, Kans. 66207

Filed Nov. 5, 1973, Ser. No. 412,575

Int. Cl. B67d *3/00*

U.S. Cl. 222—480 **12 Claims**



A dispensing container having a dispensing closure on the container with the dispensing closure having an integral and hingedly articulated closure member selectively movable between positions opening and closing a dispensing opening which communicates with the interior of the container. At least one projection extends from the closure member and is receivable in the dispensing opening when the closure member is in the closed position for closing the dispensing opening. The dispensing closure is one piece and adapted for manufacture by a molding process using a mold having two sections which move in opposed directions.

3,836,057

APPARATUS FOR USE IN DEPOSITING AERATED FOOD PRODUCTS

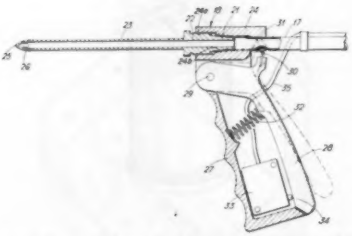
John MacManus, 14-16 Twenty Second Rd., Whitestone, N.Y. 11357

Filed Mar. 14, 1973, Ser. No. 341,290

Claims priority, application Great Britain, Mar. 14, 1972, 11887/72

Int. Cl. B67d *5/08*

U.S. Cl. 222—529 **5 Claims**



A dispensing device is coupled to a flexible hose which is connected directly to the outlet of a whipping machine. The device includes a spear for use in filling closed cakes and containers with aerated food product, such as whipped cream. A pair of jaws is mounted on the device for nipping the hose between them and positively interrupting the flow from the hose into the spear. A switch is mounted on the device to start the pump motor when the jaws are opened, and stop it when the jaws are closed.

3,836,058

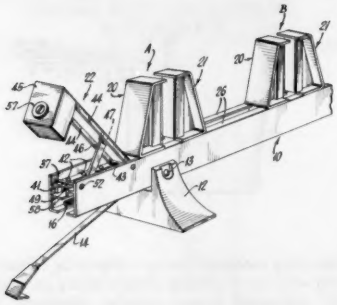
MOUNTING RACK FOR SKIS OR THE LIKE

Robert Penniman, Jericho, and Richard A. Snelling, Shelburne, both of Vt., assignors to Barreca Products Co., Shelburne, Vt.

Continuation-in-part of Ser. No. 183,550, Sept. 24, 1971, abandoned. This application Aug. 31, 1972, Ser. No. 285,492

Int. Cl. B60n 9/04

U.S. Cl. 224—41.1 F 29 Claims



The invention contemplates a novel rack construction, as for carrying skis or the like on the roof or other exterior part of a vehicle. Plural pairs of skis are vertically clamped, back-to-back, by like pairs of relatively movable upstanding post members, and a single lockable actuator at one end of the rack is operative to set or to release all post pairs in unison. In the form disclosed, each pair of posts comprises a fixed post and a movable post, and the movable posts are all ganged in their connection to the single actuator.

3,836,059

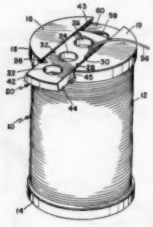
ANTI-ROLL SLIDE AND THREAD LOCK FOR SPOOLS

Marguerite M. Lauen, and James E. Lauen, both of 233 E. Renetta, El Cajon, Calif. 92020

Filed Dec. 29, 1972, Ser. No. 319,902

Int. Cl. B65h 75/32, 75/28

U.S. Cl. 225—64 5 Claims



A slide member is received in the end flange of the spool for movement from a retracted position within the confines of the spool flange to extended positions wherein the free end of the thread on the spool may be placed within the holding notch on the slide member. The thread may be locked and retained between the slide member and the end flange with the slide in a retracted position or with the slide in an extended position beyond the confines of the end flange for the purpose of preventing the spool for rolling. The slide includes a cutter notch for severing the thread, and guide notches for winding the thread into the cutter. Detents are provided to position the slide at two extended positions on either side of the flange.

3,836,060

APPARATUS FOR TRANSPORTING WEBS IN PHOTOGRAPHIC COPYING MACHINES OR THE LIKE

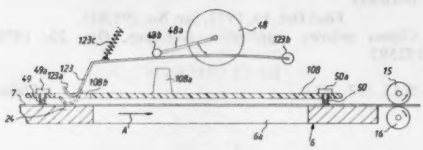
Siegfried Steinberger, Munich; Mathias Pflugbeil, Baldham; Erich Nagel, Anzing; Wilhelm Baasner, Munich; Karl Dreher, Munich; Werner Englert, Munich; Paul Ehrengruber, Munich, and Adolf Fleck, Munich, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen

Filed Jan. 24, 1973, Ser. No. 326,298

Claims priority, application Germany, Jan. 26, 1972, 2203479

Int. Cl. B65h 23/08

U.S. Cl. 226—115 17 Claims



A photographic printing machine with a single pair of advancing rolls which are located upstream or downstream of the gate and pressure plate and are driven intermittently to place a fresh increment of a photosensitive web into register with the window of the gate prior to the making of an exposure. A roller or pad consisting of or including soft rubber or similar friction generating material is located downstream or upstream of the gate opposite a back support and is moved toward the back support away from the advancing rolls in response to movement of the pressure plate to its operative position, or by a discrete actuating means, so as to tension the web between the back support and the advancing rolls not later than when the pressure plate reaches its operative position.

3,836,061

SUTURING INSTRUMENT ANVIL BUSHING PART

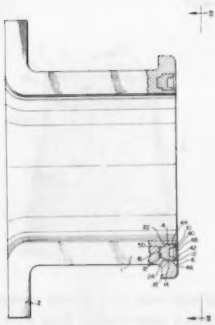
Raymond Grunwald, Montreal, Quebec, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Aug. 29, 1973, Ser. No. 392,767

Claims priority, application Canada, Oct. 16, 1972, 153946

Int. Cl. B25c 7/00

U.S. Cl. 227—155 5 Claims



A suturing instrument anvil bushing part which is economical to manufacture and so disposable after use, comprises a semi-cylindrical, plastic body having a suturing tool engaging

flange at the rear end and metal anvil retaining groove in the front face with an undulating base for locating a similarly shaped anvil, pressed therein, and retained by inturned, retaining lips on the anvil retaining groove sides. The body is preferably of a phenylene oxide based resin whilst the anvil is preferably of stainless steel.

3,836,062
ULTRASONIC APPARATUS FOR MAKING A BALL POINT PEN

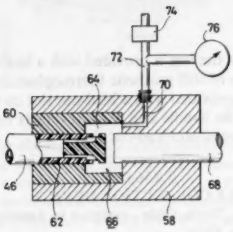
Norimasa Tsunoda, No. 9-14 Irie 2-chome Kanagawa-ku, and Tsutomu Saito, 17-34 Kokku-Bashi 4-chome Kanagawa-ku, both of Yokohama, Japan

Division of Ser. No. 301,200, Oct. 26, 1972, Pat. No. 3,795,969, which is a division of Ser. No. 193,020, Oct. 27, 1971, Pat. No. 3,775,015. This application Sept. 10, 1973, Ser. No. 395,513

Claims priority, application Japan, Nov. 6, 1970, 45-109547; Apr. 15, 1971, 46-28337; June 21, 1971, 46-43960

Int. Cl. B23k *29/00*

U.S. Cl. 228—1 **1 Claim**



The disclosure concerns apparatus for making a ball point pen by filling with ink an ink reservoir through an open end opposite the writing end and providing an end closure of heat fusible material which when sealed in the opening provides a compressed air chamber between the ink upper surface in the reservoir and the closure.

3,836,063
PRODUCTION OF CONTAINERS

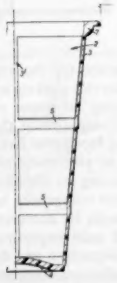
Brian Leo Chudleigh Sutch, Great Bookham, England, assignor to Airfix Industries Limited, London, England

Filed Jan. 26, 1972, Ser. No. 220,964

Claims priority, application Great Britain, Feb. 3, 1971, 3817/71

Int. Cl. B65d *25/00*

U.S. Cl. 229—1.5 B **7 Claims**



A container has a peripheral wall defined by a single preformed blank of flexible sheet material and provided with axially extending injection moulded ribs, one of which forms a seam uniting juxtaposed opposite edge portions of the piece of flexible sheet material, and at least one circumferentially extending injection moulded rib. One end of the zone bounded by the peripheral wall is closed by an end closure formed of injection moulded material or flexible sheet material. The container is formed in a container shaped mould cavity which constrains the sheet material to the required shape while the ribs and end closure are being injection moulded simultaneously.

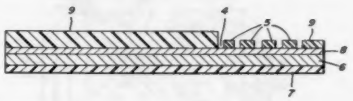
3,836,064
METAL FOIL FOR HEATING AND COOLING FOODS

James E. Stillwagon, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 4, 1972, Ser. No. 223,489

Int. Cl. B65d *81/34;* **B32b** *27/38*

U.S. Cl. 229—3.5 MF **9 Claims**



An improved metal foil composite sheet and method of fabricating the same for heating and/or cooling food products. Metal foil is coated on one surface with a heat stable, thermoplastic, epoxy and on its second surface with a heat resistant, dielectric, thermosetting base coat and a top coat of a heat resistant, heat absorptive, thermosetting material. The top coat may be applied in zones of distinct thicknesses simultaneously. Such application provides for legible printing, while preserving the desired heat absorptive properties on the entire foil pouch stock including both the printed and unprinted regions. A completed foil pouch composed of the foil composite sheet permits uniform heating and/or cooling of foods over an extended range of temperatures and times while resisting undesired deterioration.

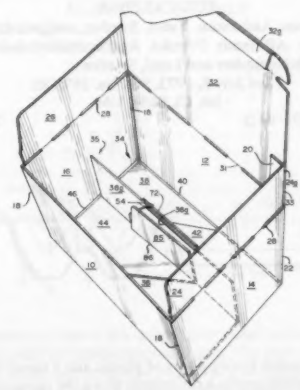
3,836,065
LOCK BOTTOM BOX WITH MEDIAL DIVIDER

Robert A. Hackenberg, East Lyme, Conn., assignor to Robertson Paper Box Co., Inc., Montville, Conn.

Filed Sept. 11, 1972, Ser. No. 287,861

Int. Cl. B65d *5/48*

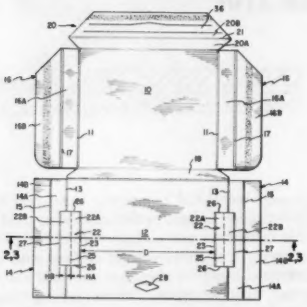
U.S. Cl. 229—27 **16 Claims**



A generally rectangular cardboard box for containing articles lies flat when it leaves the manufacturer and is shipped to

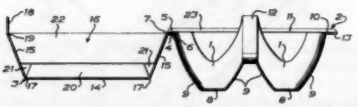
the user. When the box is made up, a lock bottom retains it in its fully open condition so that the articles can easily be inserted into the box from above. The lock bottom also forms a center divider within the box itself to help maintain the articles in the proper relation within the box.

3,836,066
BOOK CARTON
Vincent Del Priore, Bayonne; Arthur Rous, Englewood, both of N.J., and Richard Holtzman, Staten Island, N.Y., assignors to Federal Carton Corporation, North Bergen, N.J.
Filed Aug. 14, 1972, Ser. No. 280,659
Int. Cl. B65d *5/02*
U.S. Cl. 229—40 13 Claims



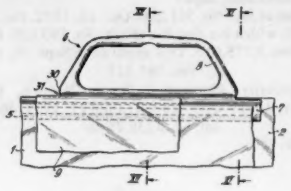
A carton for packaging an article is formed from a single piece blank and includes a bottom wall and two inner end flaps which are hingedly connected to the bottom wall. A pair of areas each having at least two parallel sides are formed in contiguous portions of the bottom wall and the inner end flaps of the carton. In the erected carton these areas form buttresses which permit a reinforced air cushion to be formed about the packaged article.

3,836,067
EGG CARTONS
Sven Ingemar Andersson, Ystad, Sweden, assignor to Torsten Jeppsson AB (and) Svenska Agghandelsforbundet Foren U.P.A., Johanneshov and Lund, Sweden
Filed July 5, 1972, Ser. No. 269,185
Int. Cl. B65d *5/66*
U.S. Cl. 229—44 R 2 Claims



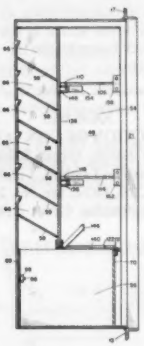
An egg carton having a tray of plastic and a cover of paperboard, in which carton a rib extends along the respective short sides of the tray and outside the interengagement area of the cover with the tray and is adapted to support the adjacent edge of the cover when the cover is in the closed position.

3,836,068
HANDLE-TYPE CARRYING BAG MADE OF PLASTICS MATERIAL SHEETING
August Schwarzkopf, Lengerich/Westphalia, Germany, assignor to Windmoller & Holscher, Westphalia, Germany
Division of Ser. No. 49,084, June 23, 1970, Pat. No. 3,693,867.
This application June 27, 1972, Ser. No. 266,565
Claims priority, application Germany, June 24, 1969, 1932047; Oct. 31, 1969, 1954944; Apr. 27, 1970, 2020549; Apr. 27, 1970, 2020548; May 22, 1970, 2025107
Int. Cl. B65d *33/06*
U.S. Cl. 229—54 R 5 Claims



Only one wall of the bag is provided with a heat-sealed carrying handle made of stiff synthetic thermoplastics. The other wall of the bag is provided with a lead-out slot on the level of the lower end of the handle and has a reversely foldable portion extending beyond said lead-out slot.

3,836,069
FEE COLLECTION DEVICE
John C. Craig, Jr., Tulsa, Okla., assignor to American Parking Company, Tulsa, Okla.
Filed Apr. 24, 1972, Ser. No. 246,898
Int. Cl. B65d *91/00*
U.S. Cl. 232—1 R 5 Claims



A fee collection device for the collection and storage of parking fees at a self-service parking lot and comprising a fully enclosed housing having an upper collection compartment and a lower storage compartment therein, the said housing also comprising a front face panel having an array of louvered deposit slots therein in communication with the collection compartment for receiving fee deposits therethrough, the said collection compartment comprising an array of inclined collection subcompartments in communication with the front face panel, one said subcompartment for each louvered deposit slot, and fee inspection and discharge means slidably disposed within the collection compartment for permitting inspection of the collection subcompartments and discharge of the collected fees from the collection subcompartments into the lower storage compartment after inspection thereof.

3,836,070

METHOD AND APPARATUS FOR DISCHARGING THE WASTE AS WELL AS ENHANCING THE FLOCCULATION OF THE SUSPENSION AND MOVING THE WASTE IN SOLID JACKET CENTRIFUGES

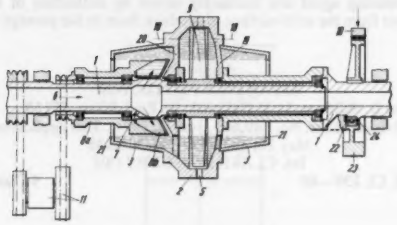
Helmut Franz Trawinski, Fasanenweg 24, D. 8452 Hirschau/Bavaria, Germany

Filed Dec. 20, 1971, Ser. No. 209,881

Claims priority, application Germany, Dec. 22, 1970, 2063063

Int. Cl. B04b *1/00*

U.S. Cl. 233—7 18 Claims



Method for discharging the waste and enhancing the flocculation of the suspension and the movement of the waste in solid jacket centrifuges by applying jolts to the drive means by braking or acceleration in order to open or close the waste discharge apertures and impart jolts to the compacted material. The centrifuge is equipped with a shaft through which the suspension is supplied and power transfer means such as spokes between the shaft and the drum jacket which has discharge apertures into which the ends of the spokes extend where the spokes are provided with means to open and close the discharge apertures and means for varying the speed are associated with the shaft which impart jolts to the transfer means.

3,836,071

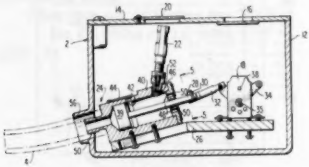
AIR-OPERATED TRAFFIC COUNTER

Harry E. Trigg, 2013 Cunningham Dr., Suite 102, Hampton, Va. 23366

Filed Aug. 27, 1973, Ser. No. 391,565

Int. Cl. G06m *1/08*

U.S. Cl. 235—99 A 3 Claims



A traffic counter is actuated by the piston rod of an air motor, wherein pulses of air from an air hose across a roadway reciprocate the piston. Piston control and anti-bounce valves are provided in the air motor so as to prevent false counts.

3,836,072

DAMPED TRANSFER ARRANGEMENT FOR A COUNTER

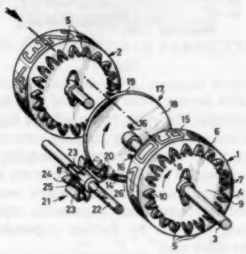
Heinz Kelch, Buchenberg, and Helmut Mueller, Sankt Georgen, both of Germany, assignors to Kienzle Apparate GmbH, Villingen/Schwarzwald, Germany

Filed Mar. 6, 1973, Ser. No. 338,551

Claims priority, application Germany, Mar. 9, 1972, 2211392

Int. Cl. G06c *7/10, 9/00*

U.S. Cl. 235—133 R 4 Claims



Two successive ordinal toothed counter wheels are connected by toothed transfer means to make a tens-transfer once during each revolution of the counter wheel of the lower order. The teeth of the counter wheels and of the transfer means are cut out and hollowed so that the teeth are resilient and dampen impacts thereon during the transfer operation.

3,836,073

HEATING, COOLING AND VENTILATING GRILLS

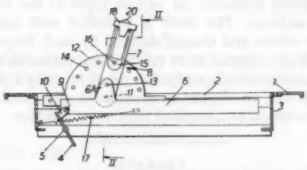
William Thomas Evans, Motherwell, and Ian Fraser, Lanarkshire, both of Scotland, assignors to Ian Fraser, Forth, Lanarkshire, Scotland

Filed Dec. 4, 1972, Ser. No. 311,449

Claims priority, application Great Britain, Dec. 4, 1971, 56378/71; Mar. 8, 1972, 10683/72; Mar. 21, 1972, 13108/72; Mar. 25, 1972, 14113/72

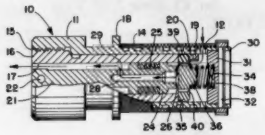
Int. Cl. F24f *11/02, 13/08*

U.S. Cl. 236—49 4 Claims



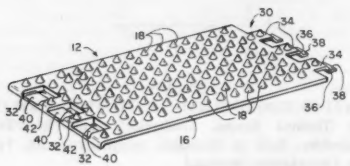
The invention herein disclosed is concerned with a temperature controlled air ventilation outlet grill. The grill comprises a frame in which are mounted a plurality of pivoted louvres biased towards a closed position with a bimetal actuator sensing the room temperature moving the louvers towards their closed position upon appropriate room temperature changes.

3,836,074
BI-THERMAL BLEED VALVE
John W. Meulendyk, Kalamazoo, Mich., assignor to Pneumo Dynamics Corporation, Cleveland, Ohio
Filed Aug. 30, 1972, Ser. No. 284,898
Int. Cl. F25b 41/04
U.S. Cl. 236—93 4 Claims



A bleed valve having three modes of operation at different temperature levels. The valve plunger has a high coefficient of expansion relative to the body support structure and abuts a spring loaded valve seat at normal operating temperatures. The valve is opened at low temperature levels by normal spacing of the plunger away from the valve seat, closes upon predetermined heat-produced expansion, and at high temperature levels reopens by further expansion that causes cocking of the valve seat.

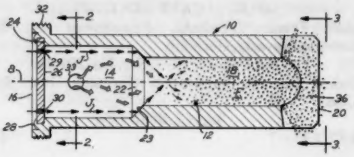
3,836,075
CLEATED EMERGENCY TRACK
Joseph M. Botbol, 3129 S. Akron Ct., Denver, Colo. 80231
Filed Sept. 5, 1972, Ser. No. 286,005
Int. Cl. B60c 27/00
U.S. Cl. 238—14 10 Claims



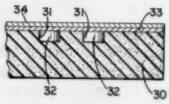
A cleated emergency track for placement in the intended path of travel of a ground-engaging wheel of a vehicle includes a plate having an array of upwardly projecting protrusions providing a gripping surface for the vehicle and a plurality of downwardly extending removable cleats which can be selected to be of different lengths to give the device the capability of being stabilized on various types of low traction or slippery surfaces. The plate is provided with interlocking means on either end thereof defined by latch fingers at one end which are adapted to be releasably received in open slots at the opposite end of an adjacent panel whereby a plurality of the panels can be aligned to provide an elongated track on which the vehicle can establish the desired traction.

3,836,076
FOAM GENERATING NOZZLE
Sherman E. Conrad, and Dennis W. Bintner, both of Des Moines, Iowa, assignors to Delavan Manufacturing Company, West Des Moines, Iowa
Filed Oct. 10, 1972, Ser. No. 296,352
Int. Cl. B05b 7/04, 15/04
U.S. Cl. 239—8 20 Claims

A nozzle and method for generating a foamed liquid includes a nozzle body, a plurality of spaced orifices forming discrete jets of a liquid foam producing agent in an elongate passage in the nozzle body, and a solid surface defined in the body upon which the jets impinge. Gas inlet openings introduce gas into the passage and the gas and liquid foam producing agent are intimately mixed by deflection of the latter from the solid surface to produce foam in the passage.

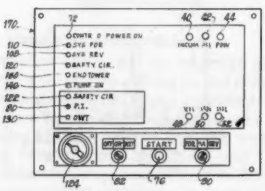


3,836,077
APPARATUS PROTECTOR
John D. Skildum, 34 N. Oaks Rd., St. Paul, Minn. 55110
Division of Ser. No. 149,665, June 3, 1971,. This application May 16, 1973, Ser. No. 360,836
Int. Cl. A61l 9/04; C23f 11/02
U.S. Cl. 239—60 9 Claims



A device for protecting structures from corrosion and the like during storage is disclosed wherein the device includes a carrier defining at least one opening therein. The opening contains a mixture of organic ammonium nitrites with varying vapor pressures, a chemical buffer system for neutralizing lead acids, and any of a class of volatile anti-oxidants for preventing the formation of varnish and scavenging oxygen from varnish deposits. The carrier also contains means for attaching it to the structure to be protected.

3,836,078
MONITORING SYSTEM FOR MOBILE IRRIGATION APPARATUS
Rich L. Olson; Murray C. Roland, both of Scottsbluff, and Clif Hammond, Gering, all of Nebr., assignors to Lockwood Corporation, Gering, Nebr.
Filed June 9, 1972, Ser. No. 261,422
Int. Cl. A01g 27/00
U.S. Cl. 239—70 8 Claims



A control system for mobile irrigation apparatus which includes a pivot tower and a plurality of radially spaced motor driven mobile towers supporting a distribution pipe includes means for determining the direction of movement of the system, the amount of water to be supplied to the crop and

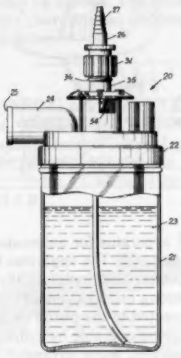
monitoring means in the form of lights connected in the control system to provide an operator with an immediate means of determining whether the system is operating and has been operating properly and also aids in identifying the sources of particular malfunctions.

3,836,079

FLUID DISPENSING DEVICE

Paul O. Huston, Montville, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Aug. 2, 1972, Ser. No. 277,469
Int. Cl. B05b *7/24*
U.S. Cl. 239—74 **5 Claims**



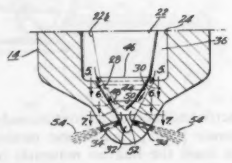
A fluid dispensing device for providing a controlled ratio of a mixture of fluids introduced to the device. The device includes a container having an inlet section and an outlet section. The container is designed for contents used in treating a fluid mixture introduced through the inlet section. The inlet section is adapted to be connected to a source of a first fluid and has at least one opening therein of a predetermined size and configuration. A sleeve is movably mounted on the inlet section and has at least one opening therein of a predetermined size and configuration and is positioned so that movement of the sleeve with respect to the inlet section will determine the relative alignment of the openings. In this manner, the portion of the openings in the inlet section exposed to a source of the second fluid will be varied and the ratio of second fluid with respect to first fluid in the mixture introduced to the container is controlled. The outlet section provides for discharging the treated fluid mixture.

3,836,080

FUEL INJECTION NOZZLE

Donald B. Butterfield, Longmeadow, and Albert A. Marchetti, Springfield, both of Mass., assignors to Ambac Industries, Inc., Springfield, Mass.

Filed Sept. 10, 1973, Ser. No. 395,828
Int. Cl. F02m *41/16;* **B05b** *1/30*
U.S. Cl. 239—96 **10 Claims**



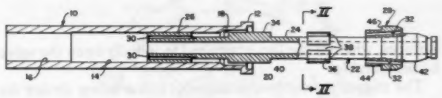
In a fuel injection nozzle of the inwardly opening type wherein the spring-loaded nozzle valve is opened by metered pulses of high pressure fuel delivered in timed sequence by a fuel injection pump, an improved nozzle valve which reduces engine gaseous emissions and exhaust smoke by permitting a reduced sac volume. The minimum fuel flow through the valve is controlled by the valve element configuration rather than the valve seat intersection with the sac as in the conventional nozzle. The present nozzle construction facilitates manufacturing and permits a change of the valve delivery characteristics by modification of the valve element rather than the less accessible valve seat. The present construction provides an increased valve seat flow capacity for a given seat angle and valve lift.

3,836,081

TORCH TIP AND METHOD OF FABRICATING THE SAME

Stephen J. Yerkins, Glenshaw, Pa., assignor to Goss Gas, Inc., Glenshaw, Pa.

Filed May 14, 1973, Ser. No. 360,305
Int. Cl. F23d *15/04*
U.S. Cl. 239—424.5 **5 Claims**



A torch tip of the type adapted to burn a mixture of fuel gas and oxygen, and method of forming the same. The tip is formed of two parts, one of which is an outer tubular housing and the other of which is force-fitted into the tubular housing. The part which is force-fitted into the tubular housing comprises an elongated shank portion having a central bore extending therethrough to convey pure oxygen to a flame at one end of the tip. At opposite ends of the shank portion are enlarged diameter portions, both of which are force-fitted into the opposite ends of the outer tubular housing. Axial bores are drilled in the enlarged diameter portions and radially spaced around the axis of the central bore to convey a mixture of oxygen and fuel gas to the flame area at one end of the tip. Intermediate the enlarged diameter end portions on the shank portion are enlarged portions which substantially abut the inner peripheral surface of the outer tubular housing to prevent collapse of the same under impact loads. These intermediate portions are provided with milled slots which permit gas to pass from one end of the tip to the other through successive plenum chambers which facilitate good mixing of an oxygen-fuel gas mixture.

3,836,082

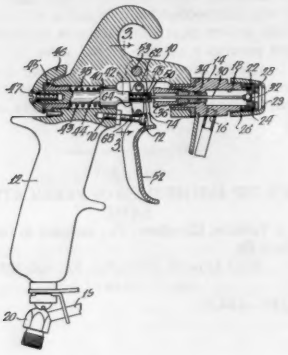
TRIGGER ASSEMBLY FOR A SPRAY GUN

Duane D. Krohn, Arvada, Colo., assignor to Binks Manufacturing Company, Franklin Park, Ill.

Filed Aug. 1, 1973, Ser. No. 384,687
Int. Cl. B64d *1/30*
U.S. Cl. 239—526 **6 Claims**

In a spray gun or the like having a valve held in closed position under fluid pressure and a trigger for opening the valve, a lever is pivotally connected to the trigger at one end, abutted against a stop at the other end, and provided with an arcuate intermediate portion in direct engagement with the valve opening rod or stem to provide a compound lever action to facilitate opening the valve against the fluid pressure. The trigger also includes a flanged portion that is slightly spaced from the lever in valve closed position, but brought into engagement with the lever after initially opening the valve against high pressure and after the pressure has equalized, so

that the trigger then assumes a conventional relationship and feel relative to the valve. The mechanism is particularly useful in guns which dispense viscous materials and have large valve



surfaces, wherein the force required to initially open the valve is considerable.

The trigger assembly also incorporates a safety device for the operator's protection.

3,836,083

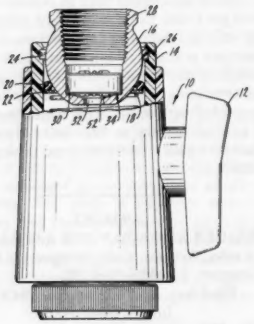
SHOWER HEAD WITH FLOW CONTROL WASHER

Frank W. Bell, Avon, Ohio, assignor to Stanadyne, Inc., Windsor, Conn.

Filed Oct. 11, 1973, Ser. No. 405,624

Int. Cl. B05b *1/30*; F15d *1/00*

U.S. Cl. 239—572 **12 Claims**



A flow control washer for use in a plumbing fixture such as a shower head is formed of a distortable rubberlike material and has a generally cylindrical shape. There are a plurality of independent water passages through the washer, with the passages being axially aligned. A distortable projection is positioned between each pair of passages. The pressure of water upon the washer causes the projections to distort, partially restricting the openings into the passages, thus controlling the flow of water through the plumbing fixture.

3,836,084

AUTOMATIC REMOTE CONTROL APPARATUS

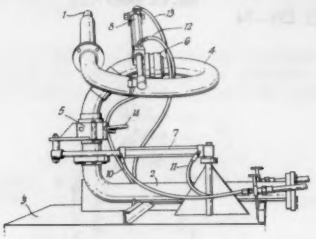
William George Luke, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, Cornwall, England

Filed Apr. 9, 1973, Ser. No. 349,463

Claims priority, application Great Britain, Apr. 14, 1972, 17418/72

Int. Cl. B05b *15/08*

U.S. Cl. 239—587 **7 Claims**



Hydraulic control apparatus for automatic remote control of a hydraulic actuating ram. The apparatus has a double-acting slave cylinder connectable hydraulically to an actuating ram, and a double-acting master cylinder the piston of which is mechanically connected to the piston of the slave cylinder, the master cylinder being operable by hydraulic pressure supplied via a pilot-operated valve arranged automatically to reverse the stroke of the master ram at limits set according to the desired stroke of the actuating ram. The control apparatus may be used for controlling actuating rams which effect reciprocating pivotal movement about one or more axes of a water jet monitor.

3,836,085

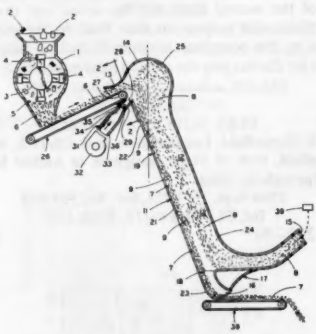
TOWER EXTRACTOR FOR MUNICIPAL WASTES

Victor Brown, 2208 Shadowdale, Houston, Tex. 77043

Continuation-in-part of Ser. No. 125,516, March 18, 1971, abandoned. This application Apr. 16, 1973, Ser. No. 351,434

Int. Cl. B07b *15/00*

U.S. Cl. 241—19 **17 Claims**



A tower extractor and method to continuously and coarsely or roughly separate paper, film plastic products and like, lighter materials from the heavier materials in a relatively large volume conglomerate of mixed solid municipal wastes or refuse. The separation occurs as the result of an airstream being directed into the conglomerate of mixed solid wastes as the mixed solid wastes begin to slide down a chute at least 30

feet long disposed at an angle of about 60° to 80° from vertical in a separation chamber. The volume and pressure of the airstream are selected so as to cause an initial separation and suspension of at least a portion of the lighter materials from the heavier materials as the waste descends down the chute. While a portion of the lighter materials is air suspended, the heavy materials and the remaining portions of the waste mixture flow down the chute and the mixture is further separated into a light fraction and a heavy fraction. The separation occurs because the components in the light fraction move at a slower rate than the components in the heavy fraction. As a result, the light components stratify above the heavy component and are drawn out of the separation chamber as a light fraction, preferably by suction. The heavier materials remain in contact with the chute and are separately discharged out of the separation chamber.

3,836,086

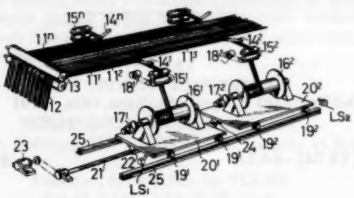
YARN WINDING APPARATUS AND METHOD

Mikio Kodama, Shizuoka-ken, Japan, assignor to Fuji Spinning Company Limited, Tokyo, Japan

Filed July 19, 1972, Ser. No. 273,046

Int. Cl. B65h *54/20*

U.S. Cl. 242—35.5 R **6 Claims**



In an apparatus for winding up a plurality of tape-like narrow yarn groups divided from sheet-like wide yarn group and treated in liquid, the apparatus comprises a first means and a second means. The first means is that of changing the direction of each liquid-treated tape-like narrow yarn groups at right angles with respect to the advancing direction of the tape-like narrow yarn groups. The second means is that of winding up each tape-like narrow yarn group on take up beams arranged with their axes being parallel to said advancing direction of the tape-like narrow yarn groups.

3,836,087

GUIDE FOR WINDING THREAD ON TRANSVERSE SPOOLS

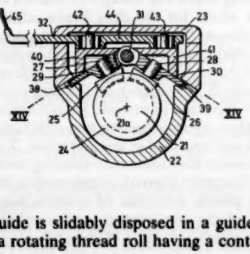
Alfred Tschentscher, Abshof 51, 5 Cologne 91, Germany

Filed Feb. 28, 1972, Ser. No. 229,848

Claims priority, application Germany, Sept. 25, 1971, 2148019

Int. Cl. B65h *54/28*

U.S. Cl. 242—43 **6 Claims**



A thread guide is slidably disposed in a guide way and in contact with a rotating thread roll having a continuous spiral guide groove. The thread guide has a runner contacting and moving with respect to the guide slot of the roller and an elongated extension arm ending in an upright thread guding device, the extension arm being aligned with the runner of the guide. The length of the extension arm determines the longitudinal acceleration of the thread being wound in the end areas of the spool as the runner passes through the end turnaround portion of the guide slot. The thread is accelerated away from the end of the spool, thus decreasing the possibility of thread buildup or hangover in this region. A double runner device is also provided and includes a positionally adjustable extension arm for the winding of conical spools.

3,836,088

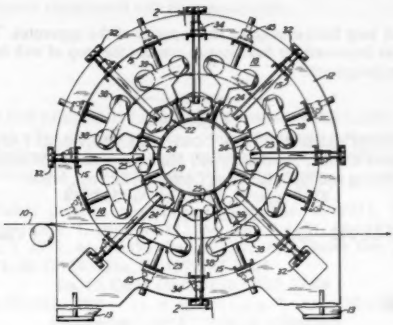
STRIP ACCUMULATOR

Wlodzimierz W. Maruszczak, Verona, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Sept. 8, 1972, Ser. No. 287,291

Int. Cl. B65h *17/48*

U.S. Cl. 242—55 **2 Claims**



The disclosure of this invention relates to a rotary accumulator for weblike material, such as, rolled steel strip, and includes inner and outer roller baskets between which the strip is accumulated in the form of two distinct coils separated by a reversible loop of the strip. The baskets are formed by cooperative pairs of rollers, each pair having its own radially positioned guide and adjustable screw jack. The baskets are received in an outer frame which has a side member with a large circular opening that exposes the baskets to the exterior of the frame.

3,836,089

WEB SPLICING, UNWINDING AND FORWARDING APPARATUS

Coenraad E. Riemersma, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

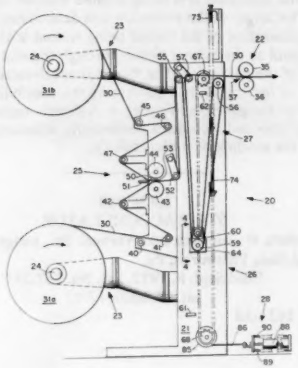
Filed Mar. 19, 1973, Ser. No. 342,556

Int. Cl. B65h *19/18, 51/20*

U.S. Cl. 242—58.1 **7 Claims**

An improved web splicing, unwinding and forwarding apparatus for unwinding web from a succession of supply rolls and forwarding web uninterruptedly to downstream apparatus at substantially constant velocity under substantially constant tension. The improvements include: means for maintaining a low level of tension in the web except during splicing transients and the like during which transients web tension is caused to increase whereby the periods of such transients are reduced; and, means for sensing the rate of increasing the

length of web looped through the apparatus and means responsive to such rate means for preventing the length of



such loop from exceeding the capacity of the apparatus. The latter improvement functions to prevent the loop of web from becoming slack.

3,836,090

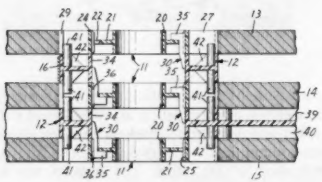
LONG YARDAGE TAPE CORE ASSEMBLY AND TAPE

Robert C. Mix, North St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 11, 1972, Ser. No. 288,014

Int. Cl. B65h *17/02*

U.S. Cl. 242—68.5 **8 Claims**



An assembly for rigidly supporting a plurality of wound rolls of tape spliced together to form a continuous usable long yardage tape supply. The assembly comprises a plurality of tape cores which are placed into the wound rolls of tape and fan-shaped tape support members. The support members are secured between adjacent cores and form transition surfaces for the tape from the inside of the first roll to the outer convolution of the next adjacent roll without slack becoming present in the tape.

3,836,091

FILM CASSETTE

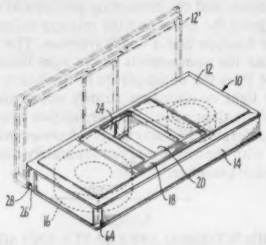
Roy E. Hurtig, Monte Sereno, and Don W. Geri, Los Gatos, both of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Filed Apr. 15, 1971, Ser. No. 134,236

Int. Cl. G03b *1/04*; **B65h** *75/02*

U.S. Cl. 242—71.2 **22 Claims**

A cassette for handling films, microfilm and the like for use with a display or reading device. A pair of film chambers are provided having rotatable cores for handling the film. A film guide path extending between the chambers has a "floating" film gate disposed over an aperture in the cassette for acceptance of a light source. The floating film gate contacts the film reader to assure exact film to optics spacing. The rotata-



ble film cores include a unique three-slot construction to provide secure holding of film ends without resort to glue, pins or other means of attachment.

3,836,092

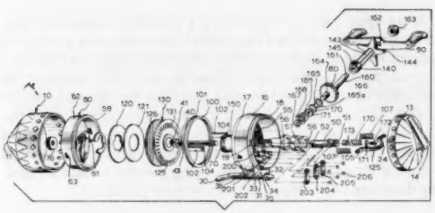
CLOSED FACE SPINNING REEL

R. Dell Hull, 6101 E. Apache St., Tulsa, Okla. 74101

Filed Mar. 16, 1973, Ser. No. 341,904

Int. Cl. A01k *89/00*

U.S. Cl. 242—84.2 A **10 Claims**



The disclosure herein relates to fishing reels, especially so-called closed face spinning reels, and it is directed more specifically to several unique structural arrangements in closed face spinning reels, including an improved drag brake arrangement, utilizing a disc friction surface on the front side of the spool in conjunction with pressure buttons on the rear side of the reel; an improved actuating arrrangement for the drag brake, including a deformable ring carrying friction buttons for the drag brake and a single revolution cam with an associated star wheel for the drag brake adjustment; an improved mounting of the winding shaft and associated bushings in molded U-shaped bearing supports; an improved anchoring of the tang to the reel housing, including a dovetailed engagement of the tang in the housing; and an improved arrangement of "no-back" elements to provide for actuation of a no-back pawl in one plane by an actuating arm attached directly to the winding shaft and operated in another plane. These new structural arrangements for closed face spinning reels enhance and simplify the operation thereof, accommodate the use of inexpensive new plastic materials of construction, simplify the manufacture of the components, and simplify the assembly thereof in the mass production of closed face spinning reels.

3,836,093

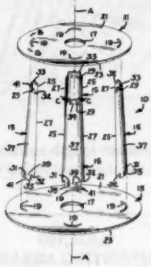
BARREL STAVE REEL

Henry F. Mozina, Michigan City, and Frank L. Blue, Minnetonka, both of Minn., assignors to Acrometal Products, Inc., Minneapolis, Minn.

Filed Nov. 17, 1972, Ser. No. 307,481

Int. Cl. B65h *75/14*

U.S. Cl. 242—118.6 **4 Claims**



A wire holding barrel is disclosed constructed of parallel spaced apart flanges having four longitudinally extending, transversely curved staves attached in a longitudinal orientation between the flanges.

3,836,094

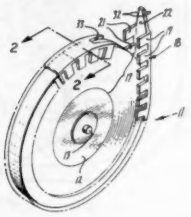
TAPE RECORD MEDIUM AND ROLL

Ashley J. Hollingsworth, Atherton, Calif., assignor to Newell Industries, Inc., Sunnyvale, Calif.

Filed Nov. 4, 1968, Ser. No. 773,209

Int. Cl. G11b *15/66;* **B65h** *75/28*

U.S. Cl. 242—192 **6 Claims**



A tape record medium wrapped to form a roll of tape is characterized by a leader formed with means along its edges for engaging the side edges of tape convolutions of the roll to maintain the roll's integrity. A second leader portion no wider than the tape record medium is characterized by a thickness which serves to maintain a predetermined spacing between the take-up hub of a transport employing the roll and a drive capstan surface.

3,836,095

ARRANGEMENT FOR AUTOMATICALLY GRIPPING AND WINDING UP A RECORDING TAPE

Jurgen Kruhn, Konstanz, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

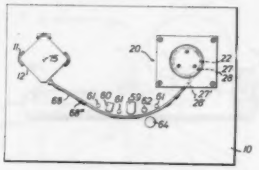
Filed Nov. 27, 1972, Ser. No. 309,664

Claims priority, application Germany, Nov. 30, 1971, 2159212

Int. Cl. G03b *1/04;* **G11b** *15/32*

U.S. Cl. 242—195 **7 Claims**

An arrangement for winding a recording tape onto a take-up core in a tape recording playback system, the tape being attached to a stiff leader of greater width than the tape. Two fixed guide-members surround the core in order to guide the edges of the leader. An intake channel is formed by extensions of the guide members which open in a line substantially tangential to the periphery of the take-up core. The inner perimeters of these guide members are spaced from the peripheral surface of the take-up core in order that the leader of the recording tape can be led through the intake channel into operative engagement with the take-up core.



3,836,096

TAPE REEL AND TAPE REEL STORING MAGAZINE

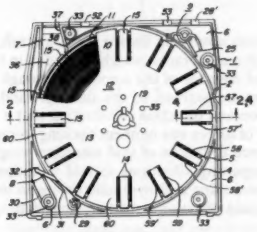
Juichi Fukushima, Osaka, and Michinori Nagahiro, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

Filed Dec. 1, 1972, Ser. No. 311,425

Claims priority, application Japan, Dec. 1, 1971, 46-113381; Dec. 1, 1971, 46-113384; Dec. 1, 1971, 46-113397; Dec. 1, 1971, 46-113398; Dec. 1, 1971, 46-113400; Dec. 21, 1971, 46-121247; Jan. 14, 1972, 47-7464

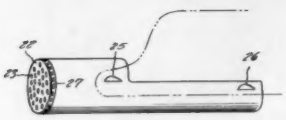
Int. Cl. G03b *1/04;* **G11b** *15/32, 23/04*

U.S. Cl. 242—197 **12 Claims**



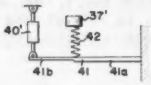
A reel for video tape where the tape has a wider protective leader strip at the outer end, and a magazine in which such a reel may be housed. The reel has flanges with offset peripheral shoulders around which the leader strip is wrapped. In order to hold the leader strip in place on the shoulders, either or both of the flanges have a plurality of integral, resilient, thin-gauge fingers projecting outwardly between pairs of radial slits, each finger having a claw at the outer end. The magazine has an aperture through which the tape and leader strip may pass and an opening through which a drive connection can engage the reel. The magazine contains a pusher which bears yieldably against the leader strip, but not the tape, to seat the strip during winding against the offset shoulders on the flange peripheries, causing the edge of the strip to be held by the fingers. The magazine also contains an interceptor in the unwinding path of the leader strip to disengage it from the reel and guide it out the aperture during unwinding.

3,836,097
SILENCER
William P. Korth, 1210 N. Trumbull, Bay City, Mich. 48706
Filed Dec. 4, 1972, Ser. No. 311,653
Int. Cl. B64c 21/02
U.S. Cl. 244—1 N **1 Claim**



A silencing device for use in aircraft to stop sonic boom and for eliminating contact with sun rays. The device, working on the principle of a gun silencer, consists of a cylindrical assembly with a central opening, a cylindrical side wall comprising an outer wall and perforated inner wall communicating with an inner space therebetween, and support means for securement to the wings of an airplane.

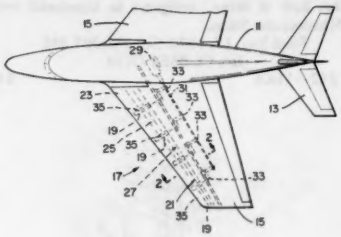
3,836,098
VIBRATION ABSORBING DEVICE FOR ROTORCRAFT
Junichi Miyashita, Niwa, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Ikuta-ku, Kobe-shi, Hyogo-ken, Japan
Filed Mar. 3, 1972, Ser. No. 231,477
Claims priority, application Japan, Mar. 8, 1971, 46-12309
Int. Cl. B64c 27/04
U.S. Cl. 244—17.27 **3 Claims**



In a vibration absorbing device for rotorcraft, of the type having at least one vibration weight provided in the proximity of a structural member of the rotorcraft through which exciting forces are transmitted to the fuselage, and arranged in such a position and direction of vibration that a selected one of a plurality of forces and moment exciting forces may be offset by the force of inertia of said vibration weight, hydraulic means for imparting vibrations to said vibration weight and means for controlling said hydraulic means to impart desired vibrations to said vibration weight are provided.

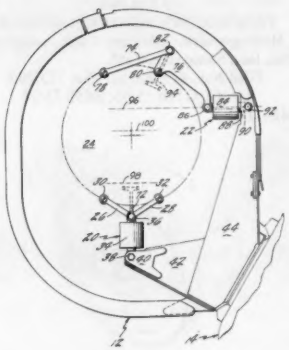
3,836,099
AIRFOIL CAMBER CHANGE SYSTEM
Edward T. O'Neill, Renton; William M. Brennan, Edmonds, both of Wash., and Gerhard K. Kriechbaum, Hagnau, Bodensee, Germany, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sept. 28, 1973, Ser. No. 401,746
Int. Cl. B64c 3/48
U.S. Cl. 244—44 **6 Claims**

An airfoil camber change system for changing the camber of the leading or trailing edges of airfoils. The system includes a flexible continuous upper surface, a lower surface comprising a plurality of slidable overlapping segments and one or more actuation mechanisms. The actuation mechanism includes a plurality of bell cranks and links that are operatively connected to the upper and lower airfoil surfaces. A primary actuator is provided to drive the actuation mechanisms. When the system is driven the actuation mechanism changes the camber profile and maintains proper separation and support of the upper and lower surfaces. The profile is changed by



bending the upper constant length surface and shortening the lower surface by increasing the overlap of the slidable overlapping segments.

3,836,100
ENGINE MOUNTING ARRANGEMENT
Paul Warren Von Hardenberg, Huntington, and George Anthony Molnar, Milford, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed June 13, 1973, Ser. No. 369,692
Int. Cl. B64d 27/20, 27/26
U.S. Cl. 244—54 **11 Claims**

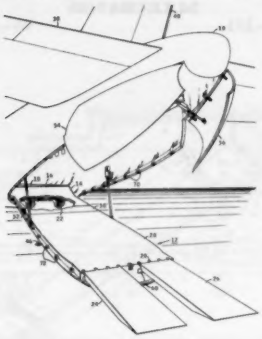


Aircraft engine mounting arrangement in which a rear lower mount has near zero lateral restraint and an elastic vertical restraint and rear upper mount has near zero vertical restraint and an elastic lateral restraint, and an imaginary straight line drawn through the horizontal line of restraint for the front mounting and the rear upper mount locations will pass through the engine installation center of gravity to uncouple engine roll response from airframe lateral input motions.

3,836,101
AIRCRAFT CARGO RAMP SYSTEM
Armand D. Mattia, and Bruno W. Bracka, both of La Mesa, Calif., assignors to General Dynamics Corporation, San Diego, Calif.
Filed Apr. 26, 1973, Ser. No. 354,836
Int. Cl. B64c 1/22
U.S. Cl. 244—137 R **7 Claims**

A cargo ramp system suitable for use with the rear fuselage of low-wing jet transports. The ramp includes a forward ramp section hinged to the aft end of the fixed cargo floor and an aft ramp section pivotally mounted on the fuselage structure. The

two sections form a unitary ramp when extended. In flight, the forward section forms an integral part of the cargo floor and the aft section forms an integrap part of the fuselage. During

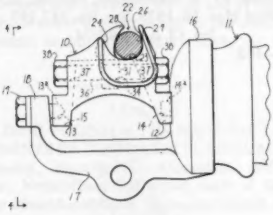


unloading or loading, the forward section is movable to selectively align either with the main cargo floor or with the main ramp section.

3,836,102
CONDUCTOR CLAMP

Gaddis G. Hall, P.O. Box 6846, Birmingham, Ala. 35210

Filed Dec. 13, 1973, Ser. No. 426,711
Int. Cl. F16l *3/08;* **F16g** *11/06;* **H01b** *17/16*
U.S. Cl. 248—74 R **8 Claims**



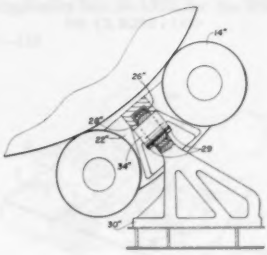
A clamp body has aligned supports at opposite sides for supporting the body parallel to the longitudinal axis of a line insulator. A groove in the body extends perpendicular to the aligned supports and has a transverse notch in one side receiving a keeper. A depending projection on the keeper moves in a transverse recess in the body beneath the notch and has a threaded opening therethrough receiving a threaded member with the ends of the threaded member extending through nonthreaded openings at opposite sides of the body. Axial movement of the threaded member is limited and a tool engaging member is carried by each end thereof outwardly of the body.

3,836,103
SUPPORT FOR TUBULAR ROTARY KILN

Roger Retali, Saint Cloud; Alain Chielens, Marcq En Baroeul, and Bernard Boussekey, Lille, all of France, assignors to Fives Lille Cail, Paris, France

Filed May 17, 1973, Ser. No. 361,051
Claim priority, application France, Aug. 16, 1972, 72.29260
Int. Cl. F27g *7/00;* **F16c** *13/04*
U.S. Cl. 248—130 **16 Claims**

Supports for a rotary kiln comprise a support base, a pair of rollers mounted on the respective ends of a beam, and a ball-and-socket swivel joint mounting the beam on the support base intermediate the beam ends, the joint having a center in the plane of symmetry of the rollers perpendicular to the axes

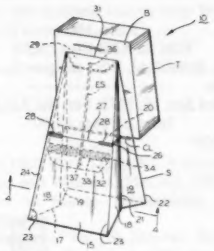


of the rollers and equidistant from the roller axes, and a diameter smaller than the width of the rollers defining a band of peripheral contact with the kiln during rotation thereof.

3,836,104
DISPLAY STAND

Ronald H. Miller, Somerville, and Bruce A. Radli, Maplewood, both of N.J., assignors to Container Corporation of American, Chicago, Ill.

Filed Apr. 12, 1973, Ser. No. 350,405
Int. Cl. A47f *5/11*
U.S. Cl. 248—150 **1 Claim**



A combination merchandise tray and stand for displaying merchandise comprises front and rear panels foldably joined at longitudinal edges thereof to a gusset panel having a longitudinal medial score line. The gusset, front and rear panels have transverse collinear cut and fold lines whereby they can be folded medially into a collapsed position. The front panel has the upper portion secured to the tray and resilient means are operable upon the unfolding of the panels causing the gusset panels to move to position providing erected stability of the front, rear and gusset panels.

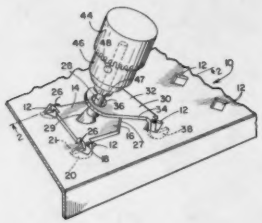
3,836,105
MEANS FOR PREVENTING UNAUTHORIZED REMOVAL OF A POWER TOOL OR THE LIKE FROM A DISPLAY BOARD

Howard J. Marschak, 865 W. North Ave., Evanston, Ill. 60622

Filed May 17, 1973, Ser. No. 361,234
Int. Cl. A47f *5/00;* **E06b** *7/28;* **A47h** *1/10*
U.S. Cl. 248—223 **10 Claims**

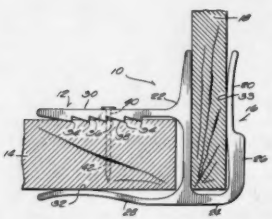
Means for preventing the unauthorized removal of a power tool or the like from a display, said means comprising a first

member which is the tool support member having hooking means insertable in the spaced openings of a shelf or back panel of a display stand, with said first member having an upstanding post, a second member which is the locking member provided with means insertable in other of said openings in said display, with said second member positionable over said



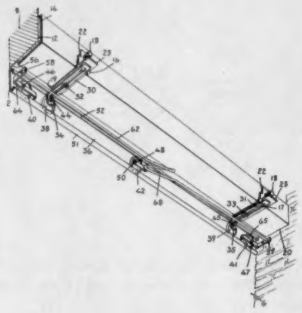
first member but exposing said upright member, and a tool in which the chuck of the tool is positioned on said upright so that when the jaws of the chuck are tightened by a chuck wrench or the like with respect to said upright, said chuck and tool will be locked against unauthorized removal from said first member and the tool will be supported in a display position.

3,836,106
TOE BOARD BRACKET
Robert F. Gray, Brookfield, Wis., assignor to A-T-O Inc., Willoughby, Ohio
Filed Jan. 15, 1973, Ser. No. 323,988
Int. Cl. F16m *13/00*
U.S. Cl. 248—229 **1 Claim**



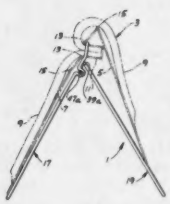
A toe board bracket made from a resilient material and having a toe board holding portion and a horizontal gripping portion formed integrally therewith. The toe board holding portion is comprised of a pair of spaced inner and outer vertically extending legs adapted to receive a toe board therebetween and the horizontal gripping portion is comprised of a pair of upper and lower spaced horizontally extending legs adapted for gripping engagement with the edge of a plank member. The lower leg of the gripping portion extends from the base of the inner leg of the toe board holding portion and the upper leg of the gripping portion extends from the middle portion of the inner leg of the toe board holding portion.

3,836,107
FIRESCREEN SUPPORT
Robert S. Barry, 55 Cairnside Crescent, Willowdale, Ontario, Canada
Filed Feb. 14, 1973, Ser. No. 332,437
Int. Cl. E06b *9/00*
U.S. Cl. 248—251 **6 Claims**



A firescreen support bar has discs rotatably supported at its rear, the discs having offcentre connection points for making connections to the bar, the connection points being adjustable relative to the bar by moving the discs.

3,836,108
BOOK HOLDER AND BOOK STAND
Sylvain A. Surette, 417 S. Washington, Trenton, Ill. 62293
Filed Mar. 16, 1973, Ser. No. 342,197
Int. Cl. A47b *97/04*
U.S. Cl. 248—452 **7 Claims**



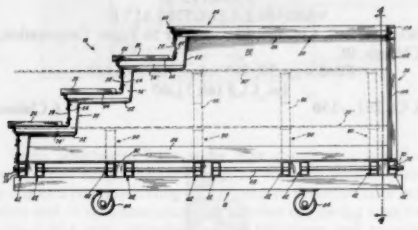
A book holder and book stand for a book having its binding in its top and having a front and a back cover, whereby the book is opened by folding the front cover and one or more pages up over the binding, the holder and stand comprising a front frame, a back frame pivotally connected to the front frame at the upper ends thereof for swinging between a collapsed position in which the frames are generally coplanar and an open position in which the lower ends of the frame are spaced apart for supporting the frames in an upright position. The book is resiliently gripped and held on the book stand by means of a pair of generally horizontal bars extending transversely of the frame sections at the top thereof and being spaced apart from one another a distance sufficient to permit the binding of the book to be inserted therebetween in such manner that the book binding is resiliently gripped by the bars and held in position on the stand when the stand is in its open position.

3,836,109

ADJUSTABLE STEP MOLD WITH PRODUCT RELEASE MEANS

Glenn F. Lister, 2221 W. Fourth, Waterloo, Iowa 50701

Filed Jan. 29, 1973, Ser. No. 327,746
Int. Cl. B28b 7/22
U.S. Cl. 249—14 4 Claims



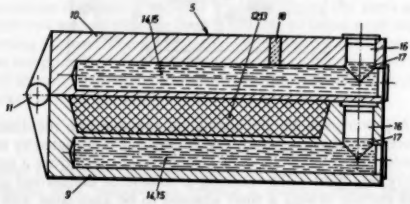
This mold utilizes opposed movable unitary sides defining respective outer shell components in combination with a fixed inner core to form a cement receiving casting cavity into which there is placed a vertically adjustable floor plate assembly selectively arrangeable to produce castings of different numbers of steps as desired within the maximum capacity of the mold. The outer shells are hingedly affixed at their lower ends to a support frame and are movable, preferably by mechanical means, outwardly in unison away from the casting for separation therefrom and during such movement, suitable adjustable abutment means on the lower ends of the shells engage the underside of the floor plate to elevate the casting sufficiently to release it from the inner core. Means are provided to conveniently adjust the mold for casting a selected number of steps and risers and variations for the size of the platform of the mold and a novel bracket holder is provided for suitably holding handrail anchor bolts and nut in the wet cement until it hardens.

3,836,110

MOULDING TOOL FOR THE MANUFACTURE OF COMPONENTS OF SYNTHETIC PLASTIC MATERIAL

Ulrich Osinsky, Koenigswinter-Oberpleis, and Ferdinand Althausen, Neukirchen, Seelscheid, both of Germany, assignors to Maschinenfabrick Hennecke GmbH, Leverkusen, Germany

Filed Mar. 9, 1972, Ser. No. 233,152
Claims priority, application Germany, Mar. 24, 1971, 2114307
Int. Cl. B29c 1/00; B29d 27/04
U.S. Cl. 249—79 8 Claims



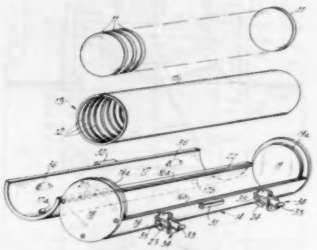
For the production of moulded articles of synthetic plastics which undergo thermal change during the moulding, a mould is used with a mould cavity and a chamber containing a quantity of a material whose physical state is adapted to change in adaption of the thermal change.

3,836,111

CYLINDRICAL MOLD FOR THE PRODUCTION OF A PLURALITY OF OPTICAL LENSES

Joseph Binder, Forest Hills, N.Y., assignor to Ashland Optical Corporation, New York, N.Y.

Continuation of Ser. No. 150,040, June 4, 1971, abandoned.
This application Nov. 24, 1972, Ser. No. 309,235
Int. Cl. B29d 11/00
U.S. Cl. 249—121 11 Claims



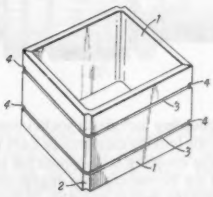
A plurality of plastic eyeglass lenses are molded simultaneously using apparatus comprising a plurality of optical mold elements held in generally parallel spaced relationship in annular interior grooves of a horizontally extending elongated cylindrical resilient holder disposed within the cylindrical cavity of a rigid holder. The latter is provided with an openable cover mounted to horizontal hinges and defining the upper half of the cylindrical cavity. With the cover open the resilient holder may be entered into and withdrawn from the cylindrical cavity and the resilient holder may be deformed for mounting the mold elements.

3,836,112

FLAT FOLDED HOT TOPPING ASSEMBLIES

Edward John Jago, and Walter A. McCray, both of Cleveland, Ohio, assignors to Foseco International Limited, Birmingham, England

Continuation-in-part of Ser. No. 203,342, Nov. 30, 1971, abandoned. This application Jan. 3, 1972, Ser. No. 214,836
Claims priority, application Great Britain, Jan. 1, 1971, 160/71
Int. Cl. B22d 7/10
U.S. Cl. 249—197 2 Claims

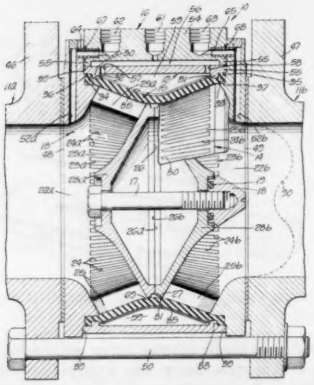


Hot topping assemblies consist of an endless belt of hot topping material which can be folded flat for storage and opened out to use.

3,836,113
AXIAL FLOW VALVE

Dwight N. Johnson, Anaheim, Calif., assignor to The Singer Company, New York, N.Y.

Continuation of Ser. No. 867,195, Oct. 17, 1969, abandoned. This application Nov. 1, 1971, Ser. No. 194,188
Int. Cl. F16k 7/07
U.S. Cl. 251—5 **20 Claims**

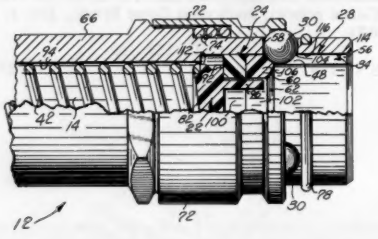


There is disclosed herein a throttling valve of the axial flow type for controlling fluid flow. The valve includes an expandable sleeve of resilient material having a toroidal configuration and positioned within a housing on a cage member. When the sleeve is in a rest position there is no fluid flow, but the sleeve can expand as a result of differential pressure acting thereon to allow flow in varying degrees between the sleeve and cage.

3,836,114
COUPLING ASSEMBLY

James F. Norton, Berea, and William F. Creadon, Cleveland, both of Ohio, assignors to The Hansen Manufacturing Company, Cleveland, Ohio

Filed Aug. 27, 1973, Ser. No. 391,676
Int. Cl. F16l 29/00, 37/28
U.S. Cl. 251—149.6 **16 Claims**

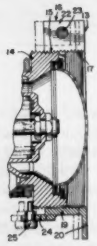


An improved coupling includes a socket assembly having a retainer which holds locking elements or balls in a disengaged condition when the coupling is disconnected and releases the locking elements for movement into engagement with a plug as it is inserted into the socket assembly. When the plug is inserted into the socket assembly, the leading end portion of the plug moves a valve member out of engagement with a seal disposed in an axially extending valve chamber. The leading end of the plug is then engaged by the seal to block fluid leakage around the plug. During continued inward movement of the plug, the retainer and seal move axially inward together. As the retainer moves axially inward, narrow inner portions of slots formed in the retainer move away from the locking balls and wide outer portions of the slots move adjacent to the locking balls. An outer sleeve on the socket assembly can then press the balls inwardly through the wide outer portions of the slots into engagement with the plug to hold it in place.

3,836,115
VARIABLE LENGTH VALVE

Felician A. Zell, Chicago, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed Aug. 30, 1973, Ser. No. 393,147
Int. Cl. F16k 51/00
U.S. Cl. 251—150 **6 Claims**

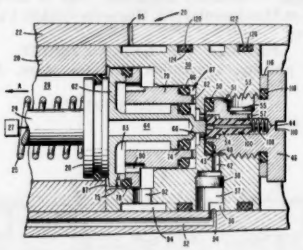


An inline fluid valve with the ability to change length for installation needs by having a threaded flange and collar at one end whereby turning the collar relative the flange provides variability of the distance between valve inlet and outlet end surfaces.

3,836,116
SELF-ENERGIZING VALVE

Douglas G. Noiles, New Canaan, Conn., assignor to United States Surgical Corporation, Baltimore, Md.

Filed Sept. 29, 1972, Ser. No. 293,371
Int. Cl. F16k 21/00
U.S. Cl. 251—174 **4 Claims**

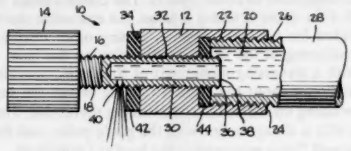


A power pack for converting gas pressure into rectilinear movement of a drive shaft. The power pack is activated by unseating the primary spool of a spool mechanism from a self-energizing pilot valve releasing a volume of pressurized gas and thereby driving a shaft adapted to be associated with a mechanism requiring an input of rectilinear movement. The pilot valve body has a throughgoing bore and is adapted to be slideably seated in a valve housing. The pilot valve body is connected with a source of pressurized gas and is seated on a spring within the valve housing so that pressurized gas is discharged through the body bore when the spool mechanism is unseated from the pilot valve body.

3,836,117
VALVE CAP

Marcello Panicali, 2357 84th St., New York, N.Y. 11214

Filed Mar. 20, 1973, Ser. No. 342,997
Int. Cl. F16k 31/50
U.S. Cl. 251—351 7 Claims

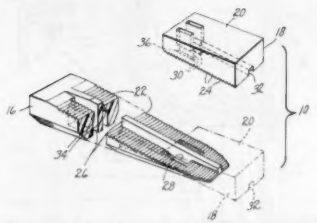


Valve attachment for a water pipe constituting a hollow, open-ended body member having an enlarged threaded bore in one end communicating with a reduced threaded bore in its other end, in combination with a knurled nut having a hollow, open-ended stem extending axially therefrom and provided with a drain opening in the stem wall leading into the rear of the stem hollow. The stem is reciprocatively threaded through the reduced body member bore, whereby rotation of the stem in one direction closes the valve, and rotation in the opposite direction exposes the drain opening to effect discharge of water from the water pipe. Washers provide a fluid seal.

3,836,118
ADJUSTABLE WORK SUPPORT ASSEMBLY

Engelbert A. Meyer, Union Lake, Mich., assignor to USM Corporation, Boston, Mass.

Filed Sept. 20, 1973, Ser. No. 399,465
Int. Cl. B25b 3/00; F16b 2/14
U.S. Cl. 254—104 4 Claims



A two-piece assembly one part of which is adjustably slidable relative to the other and into load-bearing position to hold a workpiece or structural assembly. The parts, which desirably may be of molded plastic, are formed with cooperative interlocking guide means, and their interfaces preferably include serrations disposed in inclined planes whereby the parts are anchored against slippage from a suitably adjusted work supporting relation. The range of take-up action is dependent on the ramp inclination of the base part upon which a normally shorter complementary part is movable into and automatically locked in work abutting position.

3,836,119
ROOF COVERING REMOVING TOOL

Edwin C. Saucier, Sr., and Edwin C. Saucier, Jr., both of Biloxi, Miss., assignors to Jeannie A. Saucier, Biloxi, Miss.; a part interest

Filed July 19, 1971, Ser. No. 163,717
Int. Cl. B66f 3/00
U.S. Cl. 254—131 3 Claims

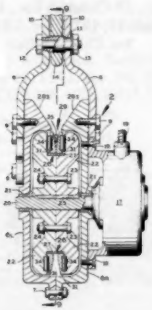
A manually manipulatable tool which lends itself to practical and reliable use when the user is called upon to dislodge and systematically free and expeditiously remove composite roof covering material and characterized by a handle having head means at the working end. A straight elongated handle is designed for stand-up use and can be grasped at longitudinally spaced points with both hands. The forward end is provided with a rigidly mounted blade which is firm but bendably resilient, is longitudinally bowed, has a leading rounded end

fashioned into a cutting blade and has its rearward end joined to the forward end of the handle. The leading end is guidingly piloted and inserted and wedged between the roof covering material and underlying roof surface. It is forcibly shoved in a manner to cut and dislodge strips of suitable length and paves the way for lifting and removing the remaining block-like portions.

3,836,120
POWER DRIVEN BLOCK AND TACKLE

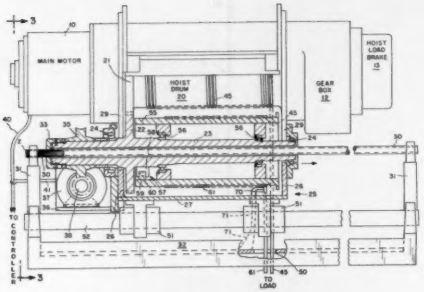
Shale J. Niskin, 2941 Lucaya St., Miami, Fla. 33131

Filed Feb. 2, 1973, Ser. No. 329,212
Int. Cl. A01k 73/06; F16h 55/56
U.S. Cl. 254—138 7 Claims



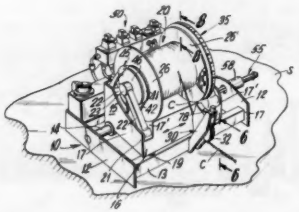
A portable power driven single sheave block and tackle with a motor means secured to one side of the block for rotating the sheave when the motor is energized. The sheave is provided with a plurality of peripheral jaws adapted to be automatically moved to engage a rope within a predetermined range of diameters and including means for securing the block to a support for angular movement for dispensing and retrieving the rope within a wide range of horizontal and vertical directions.

3,836,121
MOTOR-DRIVEN HOIST WITH PROTECTIVE BRAKING SYSTEM
Cecil Roy Jones, Orange, Calif., assignor to Transfer Systems Incorporated, North Haven, Conn.
Filed June 23, 1972, Ser. No. 265,571
Int. Cl. B66d *5/18*
U.S. Cl. 254—170 **11 Claims**



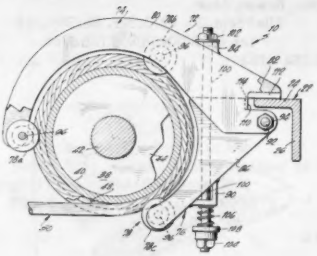
A motor driven hoist especially useful for moving nuclear reactor fuel is described. A principal feature is a positive locking system to prevent load dropping when a malfunction develops. The hoist includes a main drum-supporting cable for the load and which is directly driven by a main hoist motor. A worm wheel is coupled to the drum. A mating worm is in turn driven by an auxiliary motor which has insufficient power to carry the load. The drum cannot rotate unless both motors are operative. The auxiliary worm motor and worm gearing function as an automatic lock which opens to permit drum rotation only so long as the main motor is delivering power to the main drum. Additional features include directly driven auxiliary drums for simultaneously supplying electrical or air hoses to the load, and means for translating the drum while rotating same to maintain the drum cable aligned with the load.

3,836,122
CABLE WINCH
Wayne M. Pierce, Jr., 39 Christine Ter., Milford, Conn. 06460
Filed Nov. 20, 1972, Ser. No. 308,165
Int. Cl. B66d *1/48*
U.S. Cl. 254—172 **4 Claims**



A three-speed hydraulic winch includes a base, a drum support, a drum shaft mounted on the support, a cable drum rotatable on the drum shaft and means mounting the support on the base for reciprocation substantially parallel to the drum shaft. A cable guide pulley is rotatably mounted in a pulley block which is fixedly mounted on the base. An endless chain traverse means is coupled between the base and the support to reciprocate the support. Four hydraulic motors constitute the drive means, and are operable to rotate a gear having clutch teeth on one face engageable with clutch teeth on a flange of the drum, and a chain and sprocket drive interconnects the drum and the endless chain traverse means. The guide pulley is operatively associated with an angle sensing device controlling the pull of the winch and controlling the load on the drum to a constant predetermined maximum. When the clutch is disengaged and the drum is free to rotate, a disk brake is automatically engaged if there is no tension on the cable, to prevent cable over-ride and hang-up, and this brake is released responsive to cable tension. The clutch cannot be disengaged if the cable is under tension. An extension shaft may be provided for driving a capstan or any other device. The fixed positioning of the cable guide pulley on the base, combined with a traversing movement of the drum, provides for level winding without the cable sweeping across the support during winding on the drum or unwinding therefrom. The pull on the cable is always in line with the guide pulley and there is "no side pull," thus maintaining the load at a minimum.

3,836,123
WINCH FOLLOWER ASSEMBLY
Arthur E. Bausenbach, Levittown; Richard T. Seiple, Sayville, and Frank D. Palopoli, Babylon, all of N.Y., assignors to Sanitary Controls, Inc., Deer Park, N.Y.
Filed June 15, 1971, Ser. No. 153,338
Int. Cl. B66d *1/00*
U.S. Cl. 254—186 R **4 Claims**

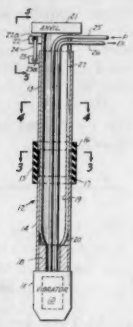


A winch follower assembly includes a motor driven drum on which a cable winds or from which a cable unwinds, as desired. A follower rides on the winch frame adjacent the drum and has a number of rollers carried by a pair of jaws contacting the last coil wound on the drum for the purpose of holding such coil frictionally against the winch drum to prevent undesirable unraveling.

3,836,124
REINFORCEABLE VIBRATOR SYSTEM
George L. Malan, 560 E. Rowland Apt. (G-3), Covina, Calif. 91722
Filed May 21, 1973, Ser. No. 362,429
Int. Cl. B28b *1/08;* **B01f** *11/00*
U.S. Cl. 259—1 R **12 Claims**

There is disclosed a fluid-operated vibrator mounted in a housing at the end of a stem serving as a handle. The stem is formed in two tubular sections spaced apart and joined by a flexible coupling capable of bending under the vibrational action of the vibrator. A slidable sleeve is adapted to be moved alongside the stem sections to reinforce the stem against bending at the coupling so that the vibrator housing may be thrust

into wet concrete or granular material by hammering on an anvil at the top of the sleeve. To restore the flexibility characteristic of the coupling, the sleeve is withdrawn from the lower stem section, thereby permitting bending at the coupling under action of the vibrator.

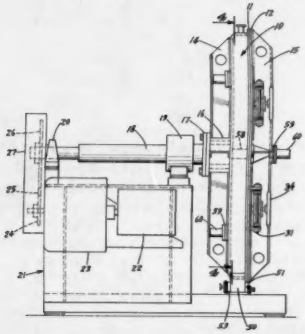


3,836,125

TUMBLING APPARATUS FOR BLENDING FINELY DIVIDED DRY MATERIALS

Gene A. Thoreson, Santa Ana, Calif.; Richard A. Ley, Minneapolis, Minn.; Cardell E. Miller, Hudson, Wis., and Lewis A. Emery, Minneapolis, Minn., assignors to The Strong-Scott Mfg. Co., Minneapolis, Minn.

Filed May 10, 1972, Ser. No. 252,021
Int. Cl. B01f *9/06, 15/02*
U.S. Cl. 259—3 **11 Claims**



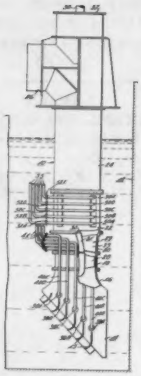
A blender for intimately mixing and homogenizing relatively free-flowing finely divided powdered and granular materials. The blender is characterized by a vertically disposed circular chamber of relatively large diameter and relatively narrow width within a housing journaled for rotation about a horizontal axis. The chamber is fitted with a plurality of generally horizontal, widely spaced apart separation elements projecting from either or both of the side walls, spanning the width of the chamber and disposed in a substantially uniform array. As the housing is rotated, material to be blended is carried to the top of the chamber from where it falls onto the separation elements as it cascades downwardly. The material is divided successively as it passes over each separation element and then recombined as it falls through the chamber. Such division occurs hundreds or thousands of times in the course of the blending operation.

3,836,126

MIXER PUMP

Wilton W. Weitmer, Wauwatosa, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 27, 1971, Ser. No. 212,300
Int. Cl. B01f *5/12*
U.S. Cl. 259—95 **22 Claims**



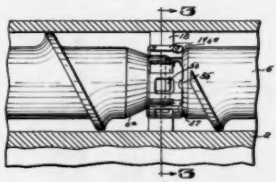
A mixer pump suitable for, but not restricted to, use in pumping water from a receiving tank in a municipal water supply system or the like and including means for separately injecting a plurality of chemical treating agents or the like into the water being pumped. In the illustrated embodiment, means are provided for separately injecting a plurality of chemical treating agents each at a plurality of spaced locations into the water stream on the suction side of the pump impeller whereby the chemical treating agents in passing through the impeller are intimately mixed with the water; and means are additionally provided for separately injecting a plurality of additional chemical treating agents each at a plurality of spaced locations into the interior of the pump housing on the discharge side of (i.e., downstream of) the impeller, particularly on the discharge side of the pump diffuser if there is a pump diffuser.

3,836,127

APPARATUS FOR EXTRUDING MELTED PLASTIC MIXTURES

Desider G. Csongor, 35 Wilson Rd., Bedford, Mass. 01730

Filed July 19, 1972, Ser. No. 273,190
Int. Cl. B29b *1/06;* **B01f** *7/08*
U.S. Cl. 259—191 **3 Claims**



An improved apparatus for extruding plastic materials provides for processing a mixture of plastic particles, additives, dyes, and the like by means of an extruder screw to form a melted mass which is moved in a helically-directed stream in a confined space. At a predetermined point, flow-diverting means in said confined space abruptly changes the flow pattern. Portions of the helically-directed melted mixture advanced by the extruder screw and coming into contact with

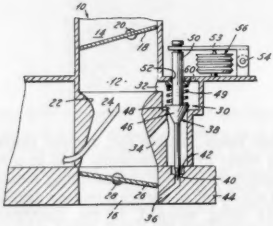
the flow-diverting means, undergo a continuous shearing action and sheared-away portions of the melted material are constantly turned over upon themselves and forced through restricted passageways of short axial length in a highly turbulent flow pattern. After leaving the restricted passageways, the melted material again moves in a helical path of flow. Turbulency thus induced at one or more points in the flow line brings together melted and unmelted particles more effectively and rapidly, and there is further accomplished an improved mixing together of the melted mixture and the additives and other components.

3,836,128

CARBURETOR AMBIENT MIXTURE CONTROL

Max W. Lunsford, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 3, 1972, Ser. No. 303,572
Int. Cl. F02m 7/20
U.S. Cl. 261—39 A **2 Claims**



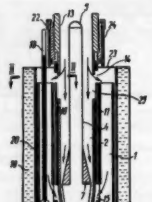
The carburetor has an air bypass passage for supplying additional air around the venturi to the air/fuel mixture in response to ambient operating conditions, the air bypass passage being controlled by valve means sensitive to changes in ambient conditions and including an additional air bleed for supplying air to the bypass passage when the carburetor choke valve is closed so as to lean out the overrich mixture that would normally be provided with changes in ambient operating conditions if such an air bleed were not provided.

3,836,129

EVAPORATOR FOR LIQUID ANESTHETICS

Alexandr Semenovich Perelmutr, Dmitrovskoe shosse, 29, kv. 123; Alexandr Zinovievich Berlin, 2 Sinichkina ul., 19, kv. 101; Igor Konstantinovich Gorlin, ul. Korolenko, 2/23, korpus, 5, kv. 8., and Alexandr Gustavovich Traxler, ul. Pravdy 7/9, kv. 188, all of Moscow, U.S.S.R.

Filed Aug. 18, 1972, Ser. No. 281,772
Int. Cl. B01d 1/06
U.S. Cl. 261—47 **3 Claims**



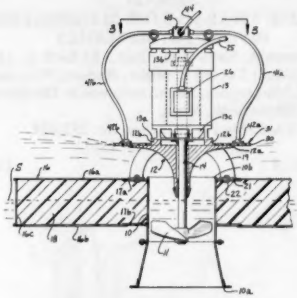
An evaporator for liquid narcotics, comprising a straight-flow by-pass duct, wherein provision is made for a shutter and a control slide which, when in one of the extreme positions, interacts with the shutter to close gas admission into the by-pass duct, and an evaporating chamber. The latter is made as a circular straight-flow channel embracing the by-pass duct and is provided with capillary-structure evaporating elements arranged inside the chamber lengthwise the gas flow lines, and with an effuser provided at the outlet of the chamber concentrically to the shutter so as to establish an annular gap therebetween. The control slide, when in the other extreme position, interacts with the effuser to shut up gas issue from the evaporating chamber.

3,836,130

LIQUID AERATING APPARATUS

Jack R. Earhart; James Dennis Crocker, and John K. Johnson, all of Rockford, Ill., assignors to Solem Machine Company, Rockford, Ill.

Filed June 23, 1972, Ser. No. 265,472
Int. Cl. B01f 7/06
U.S. Cl. 261—142 **10 Claims**



An apparatus for aerating liquid including an upwardly extending throat having an impeller for pumping liquid upwardly through the throat and a diffuser overlying the upper end of the throat to direct the liquid outwardly in an annular spray pattern, a motor mounted above the diffuser for driving the impeller, and an electrical heater extending around the outer periphery of the diffuser for inhibiting formation of ice on the aerator. The heater is in the form of a ring that overlies the upper side of the diffuser outwardly of the motor and preferably extends outwardly of the periphery of the diffuser at a level to limit the height of the liquid spray pattern.

3,836,131

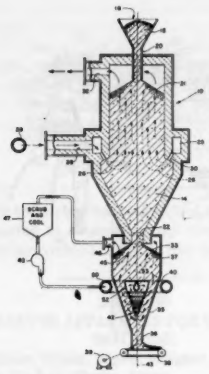
APPARATUS FOR COOLING A MOVING BED OF SOLID, GAS PERMEABLE PARTICLES

Donald Beggs, Toledo, Ohio, assignor to Mildrex Corporation, Toledo, Ohio

Filed Dec. 26, 1973, Ser. No. 428,146
Int. Cl. F27b 1/00
U.S. Cl. 266—20 **5 Claims**

Apparatus is provided for efficiently cooling a moving bed of gas permeable particles descending downwardly through a converging bin. The apparatus includes a support mechanism and an especially configured gas distributor depending downwardly therefrom within the bin. The distributor includes a plurality of tiered gas units in nested relationship with one

another and arranged in progressively smaller sizes from the top of the distributor. Each gas unit contains a predetermined



number of peripherally spaced gas outlet ports to provide streams of cooling gas under sufficient pressure at each unit to effectively cool the bed of particles.

3,836,132

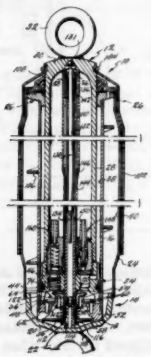
SELF-LEVELING COMBINED SHOCK ABSORBER AND FLUID SPRING ASSIST UNIT

Sellers B. McNally, Homewood, and Charles D. Lemme, Park Forest, both of Ill., assignors to Maremont Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 163,983, July 19, 1971. This application June 26, 1972, Ser. No. 266,374

Int. Cl. B60g *4/26*

U.S. Cl. 267—64 R **32 Claims**



A self-leveling combined shock absorber and liquid spring unit adapted to be mounted in place of a conventional shock absorber between the sprung and unsprung masses of a vehicle having a conventional suspension system made up of a pair of upper and lower tubular structures mounted for longitudinal movement with respect to each other in contracting and extending telescopic relation, the tubular structures providing a cylinder, piston and piston rod arrangement defining separate rebound and compression damping chambers filled with hydraulic fluid and supplied from an annular supply chamber concentric with the cylinder, the interior of the piston rod member defines with a separate elongated displacement member a variable volume load bearing liquid spring chamber, the displacement member serving additionally as part of a pump-up mechanism for positively displacing hydraulic fluid from a supply damping chamber into the load bearing liquid spring chamber and as a part of a separate pump-down mechanism for positively displacing liquid from the load bearing liquid spring chamber into a damping chamber, the operative strokes and displacements of the two pump mechanisms being different but interrelated so as to maintain a variable amount of hydraulic fluid within the load bearing liquid spring chamber sufficient to provide a load bearing force when the tubular structures are in a generally centrally located predetermined relative telescopic position, which varies substantially in accordance with the static load carried by the unsprung mass of the vehicle, the arrangement being such that positive damping is provided at no-load capability and abrupt changes in the spring force are avoided during the telescopic movements of the tubular structures through the predetermined central position.

3,836,133

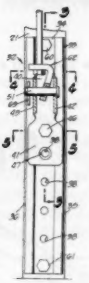
DOOR SPRING ANCHORING MEANS

John P. Pyka, 6903 Columbus Ave., Van Nuys, 91405, and Robert J. Pyka, 22188 Canones Cir., Saugus, both of Calif. 91350

Filed Mar. 2, 1973, Ser. No. 337,463

Int. Cl. F16f *1/12*

U.S. Cl. 267—69 **6 Claims**



A mounting guideway or channel is secured to a supporting structure (door jamb) by one or more lag bolts at the appropriate location. A strut slidably received within the bracket guideway or channel is connected to the door spring and includes a bolt interconnecting the strut member and a locking nut slidably held in the guideway. The end of a pinch bar or other similar tool is inserted through an opening in the strut member and received within one of a set of openings in the bracket, after which the tool is manipulated to lever the strut to a position placing the spring in the desired amount of tension. While maintaining the spring at the required tension, the bolt in the strut is tightened securing the strut member to the locking nut and thereby fixing the strut member and spring at one position.

3,836,134

PNEUMATIC ISOLATOR

Russell T. Lowe, Wellesley; Jerome S. Pepi, Chelmsford, and Dale W. Schubert, Sudbury, all of Mass., assignors to Barry Wright Corporation, Watertown, Mass.

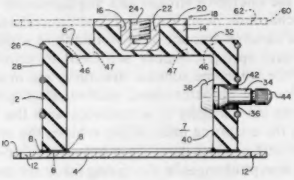
Filed Mar. 19, 1973, Ser. No. 342,861

Int. Cl. F16f *3/67*

U.S. Cl. 267—152 **24 Claims**

The invention is an isolator device for resilient supporting a first member relative to a second member under variable load

conditions. The device comprises two integral spring stages, one of which is pneumatic, arranged so that the pneumatic

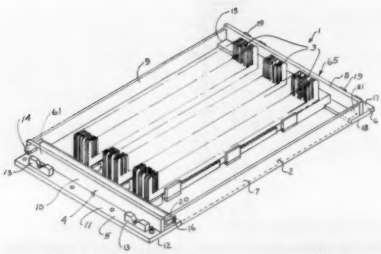


spring stage normally carries the applied load and the other spring stage assumes substantially all of the applied load when the pneumatic spring is overloaded.

3,836,135
PLATE SPACING FIXTURE FOR ELECTROSTATIC AIR CLEANERS

Lawrance W. Wightman, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 26, 1973, Ser. No. 327,083
Int. Cl. B25b *1/20, 1/08;* **B03c** *3/47*
U.S. Cl. 269—43 **23 Claims**



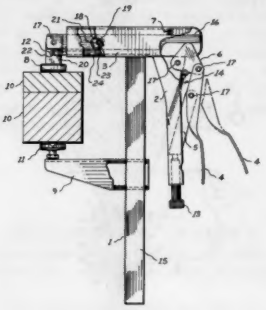
A fixture is disclosed having a frame containing a plurality of combs grouped into sets within the frame. Each of the comb sets is adjustable laterally so as to accommodate a variety of different length, relatively thin plates. Such plates find application in electronic air filter cells. The plates are inserted between the fingers of the combs. At least one individual comb is movable with respect to a stationary comb in the comb set. The plates are held securely and spaced properly for later processing by shifting the movable comb so as to lock the plates between the movable and stationary comb in each comb set.

3,836,136
WORK CLAMP

Jack Raymond Davis, 906 W. Sierra Dr., Santa Ana, Calif. 92708

Filed Jan. 2, 1973, Ser. No. 320,659
Int. Cl. B25b *1/14*
U.S. Cl. 269—150 **1 Claim**

Work clamp has a frame member upon which is movably mounted a clamp pad. The frame member also pivotally carries a clamp arm. A movable jaw is pivotally mounted on the clamp arm. The cam pivots the clamp arm on the frame so that

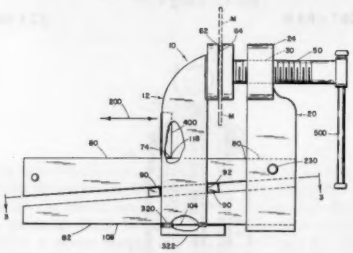


clamping is achieved and pivoting of the one jaw permits the jaws to be maintained in proper relationship.

3,836,137
CLAMP AND VISE

John L. Hostetter, Murray, Nebr. 68409

Filed Oct. 1, 1973, Ser. No. 402,108
Int. Cl. B25b *5/02*
U.S. Cl. 269—167 **5 Claims**



A clamp or vise, having opposed first and second clamp face means carried by a slidable and fixed clamp section, respectively, the slidable section being slidable along a pair of opposed guide members, having a brake member disposed therebetween and gripped thereby when said guide members are pressed toward each other by a tilting of the sliding clamp section responsive to clamping pressure of said clamp faces resultant from clamping screw pressure.

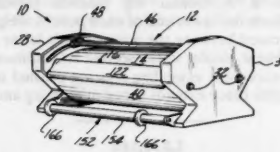
3,836,138
WEB FOLDING MACHINE

Constant L. Klepper, and Ronald Koziel, both of Troy, Mich., assignors to Klep Corp., Madison Heights, Mich.

Filed Oct. 16, 1972, Ser. No. 297,718
Int. Cl. B65h *45/20*
U.S. Cl. 270—79 **3 Claims**

A machine for making accordion-like folds in a web having a curved table on which successive folded layers of the web are received and having a pair of spaced clamps overlying the edges of the table. A web guide overlies the table and is oscil-

lated between the clamps in a curved path generally similar to the curvature of the table and is simultaneously rotated to



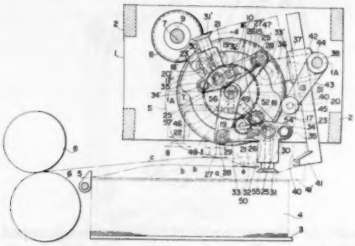
form loops in the web which are tucked under a raised clamp which is lowered to retain the loop thereunder and form a sharp straight unwrinkled crease or fold therein.

3,836,139

PAPER FEEDING APPARATUS FOR USE IN PRINTING MACHINE

Shigeru Shimizu, Osaka, Japan, assignor to Hamada Printing Press Mfg. Co. Ltd., Osaka, Japan

Filed Aug. 28, 1972, Ser. No. 284,113
Int. Cl. B65h 3/08
U.S. Cl. 271—95 **16 Claims**



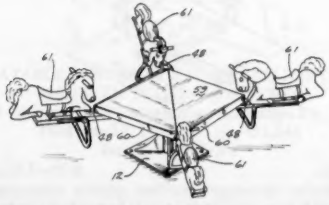
A paper feeding apparatus for use in a printing machine in which the sheets of paper are fed into the printing machine one after the other with the use of a sucker device which is continuously rotated along a modified cycloid curve by means of planetary gear systems in cooperation with quadric chain mechanism, whereby the disadvantages inherent in a conventional paper feeding apparatus having a reciprocating sucker is substantially eliminated.

3,836,140

RESILIENTLY TILTABLE PLAYGROUND APPARATUS

Claude W. Ahrens, W. Hwy. 6, Grinnell, Iowa 50112

Filed Nov. 5, 1973, Ser. No. 413,050
Int. Cl. A63g 17/00
U.S. Cl. 272—54 **7 Claims**



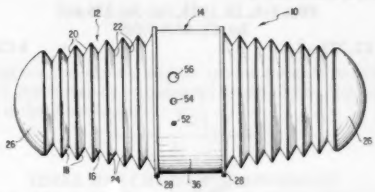
The playground apparatus of this invention includes an occupant supporting structure that is rubber mounted for a rocking or tilting movement relative to an upright shaft carried on a ground supported base member. A plurality of rubber cylinders spaced in a circular row about the shaft are compressible between a pair of disc members mounted on the shaft. The lower disc member is secured to the shaft and the upper disc member forms part of the occupant supporting structure. The upper disc member has an opening surrounding the shaft with a bearing member between the opening and shaft so configured as to provide for a limited tilting movement.

3,836,141

PNEUMATIC CHEST EXERCISER

Robert Alan Franklyn, 8758 Sunset Blvd., Los Angeles, Calif. 90069

Filed Dec. 18, 1973, Ser. No. 425,871
Int. Cl. A63b 21/00
U.S. Cl. 272—79 C **10 Claims**



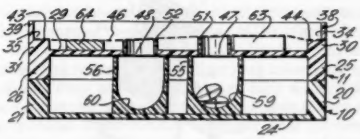
An exercise device is provided with a pair of opposed bellows members which are manually collapsible toward a central member. The central member is provided with an inlet and a plurality of different size outlet apertures, and a check valve to control air flow through the inlet aperture. Collapsing of the bellows members toward the central member causes air to be expelled through a selected one of the outlet apertures. The bellows are then released to return to their original position and the exercise is repeated, thus exercising the chest muscles underlying the user's breasts to achieve development thereof.

3,836,142

FISHING GAME

Gordon W. Baker, Middleton, Annapolis County, Nova Scotia, Canada

Filed Sept. 25, 1972, Ser. No. 293,304
Int. Cl. A63f 9/00
U.S. Cl. 273—1 M **2 Claims**



A magnetic game of skill, for example, a magnetic fishing game, is provided. The game includes a game board, which, in one example, is laid out as a facsimile of a river. A plurality of well-like enclosures are provided which extend downwardly from the board from apertures which are provided in the board. For example, the apertures may be disposed in the facsimile of the river to simulate the deep pools in the river where salmon congregate. A plurality of game pieces are provided, which are formed of non-magnetic, non-magnetizable material, and are adapted to be disposed in the bottom of such well-like enclosures. For example, a plurality of "fish" may be provided, which are formed of a pair of copper wire ellipses

disposed at right angles to one another, and united by means of a copper wire encircling ring. A magnet is disposed adjacent the mouth of each well-like enclosure to provide a predetermined field of magnetic flux at the mouth of the aperture leading to the well-like enclosure. For example, magnets of different strength and sizes are disposed at different locations around the perimeter of the apertures leading to the well-like enclosures. Finally, capture members are provided, formed of magnetizable material, which are adapted to grasp the game pieces, provided they pass through the magnetic flux at the mouth of the well-like enclosures. For example, the capture members may be a hook at the end of a line secured to a facsimile of a fishing rod, and formed of magnetizable material, and adapted to engage the loops of the copper wire "fish."

3,836,143
AMUSEMENT DEVICE

Lamartine C. Trent, 3204 Barkentine Rd., Pennisula, and Frank L. Reed, 4731 Rock Bluff Dr., Rolling Hills Estates, both of Calif. 90274

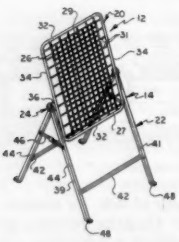
Filed Feb. 28, 1973, Ser. No. 336,410
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 R **6 Claims**

The specification discloses a party game apparatus comprising a transparent cylinder having aperatures through which objects can be ejected by movement of the body. The cylinder is held to the body of a user by a waist encircling strap.

3,836,144
PORTABLE PROJECTILE RETURN APPARATUS

Elmo J. Mahoney, Dorrance, Kans., assignor to Mahoney, Inc., Dorrance, Kans.

Filed Nov. 12, 1973, Ser. No. 414,875
Int. Cl. A63b *69/00, 67/00, 63/04*
U.S. Cl. 273—1.5 A **9 Claims**

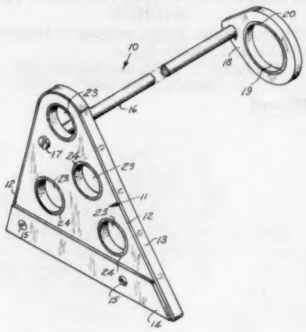


A portable projectile return apparatus comprising a return panel connected to a panel frame by resilient straps. The return panel frame is connected to a base frame by a pivotal connection offset from the center of the panel frame so that by pivoting about that connection the panel may be moved between a lower position and a higher position. In one embodiment the base frame comprises two pair of legs. Each pair of legs is pivoted together at their respective upper ends to each other end to the return panel along one side edge collapsible brace extends between the legs of each pair to form an A-frame. In a second embodiment the return panel frame is pivoted adjacent each side edge to the upper end of a telescopic post. A horizontal leg extends forwardly and backwardly from the lower end of each post. A weight receiving tray is secured between the posts at their lower ends. In a third embodiment, similar to the second embodiment, the forwardly and rearwardly extending legs are pivoted to the post and a collapsible brace extends between each leg and the post.

3,836,145
POOL DEVICE FOR HANDICAPPED PLAYERS

Walter T. Freid, 2401 Victoria Dr. S.W., Cedar Rapids, Iowa 52404

Filed May 23, 1973, Ser. No. 362,898
Int. Cl. A63d *15/10*
U.S. Cl. 273—23 **4 Claims**

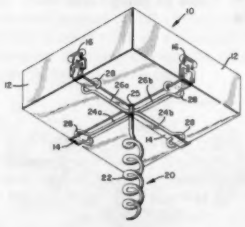


This device is for use particularly for the handicapped, so as to enable them to effectively shoot a game of pool or the like. The device consists primarily of a triangular body with a lead strip secured thereto for weight, and a rod is secured to the apex portion, the rod including a guide member for the placement of a cue stick, the cue stick extending through any one of a multiple number of felt lined openings through the body of the device.

3,836,146
BASEBALL BASE GROUND FASTENING DEVICE

David L. Golomb, Port Washington, N.Y., assignor to Everlast World Boxing Headquarters Corp., Bronx, N.Y.

Filed Sept. 13, 1972, Ser. No. 288,529
Int. Cl. A63b *71/00*
U.S. Cl. 273—25 **7 Claims**



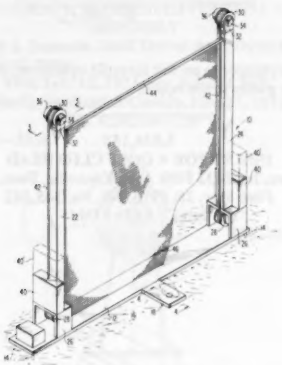
A baseball base ground fastening device has an elongated member having a screw at one end adapted to be placed into and held in the ground and a closed elongated loop at another

end. Two rods with 90° bends are movably mounted in the elongated loop for movement from first positions in which the planes defined by the bent rods are normal to the axis of the screw to second positions in which the planes are substantially parallel to the axis of the screw. Means are provided at the free ends of the bent rods for connecting the latter to the base.

3,836,147
AUTO PLACE KICKER

Stan Lee Shapiro, c/o Heavenly Creations Inc., 2111 Colonial Ave., Norfolk, Va. 23517

Filed Sept. 26, 1973, Ser. No. 400,958
Int. Cl. A63b *67/00*
U.S. Cl. 273—55 B **10 Claims**



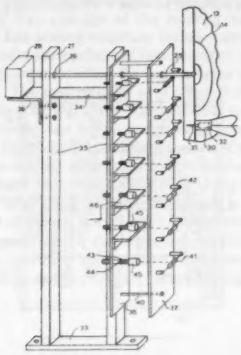
A place kick practice device constitutes a horizontal board fixed to the practice field and supporting at either end uprights which in turn support respective ends of a cross rod for vertical movement toward and away from the base board. The cross bar supports along its edge a net. A football supported on a base board extending to the rear of the cross bar, actuates a switch in response to its being centered to the place kicker who stands further to the rear of the cross bar. The switch controls release of the cross bar which is driven upwardly at a predetermined speed toward the top of the uprights, with the cross bar and net acting to intercept the ball if the kick is low or if the kicker is late in kicking the ball between the uprights.

3,836,148
ROTATABLE DART BOARD, MAGNETIC DARTS AND MAGNETIC SCORING SWITCHES

Virgil B. Manning, 978 Virginia Ave., Rockledge, Fla. 32955

Filed Jan. 11, 1974, Ser. No. 432,544
Int. Cl. A63b *71/02*
U.S. Cl. 273—95 R **10 Claims**

An automatic scoring dartboard apparatus utilizing darts having magnets attached thereto for throwing at a dart board. The dart board is rotatably mounted to a frame and is driven by an electric motor rotating the dart board at a slow speed. A plurality of magnetic actuatable switches are located behind the rotating dart board in alignment with the scoring rings of

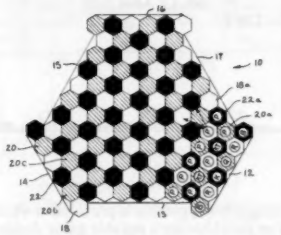


the dart board so that the magnets and the darts will be rotated by one switch thereby actuating the switch which actuates the score in the visual display.

3,836,149
THREE MAN CHESS GAME APPARATUS

Kevin L. Adams, 127 Reese Ave., and Ronald S. Wright, 126 Reese Ave., both of Lancaster, Pa. 17602

Filed May 24, 1973, Ser. No. 363,647
Int. Cl. A63f *3/02*
U.S. Cl. 273—131 AB **1 Claim**



A chess game for three players which includes a game board of generally triangular form, the corners of the triangle being omitted, the board having one hundred and eight contiguous, hexagonal playing spaces of three alternating colors, and said game including three sets of chess pieces, each set including conventional chess pieces with an additional pawn in each set. The playing spaces are distributed uniformly, with the exception that there is a row of five spaces at each corner of the triangle.

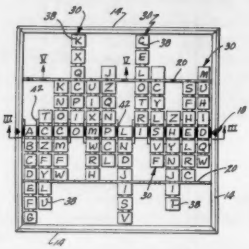
3,836,150
WORD GAME APPARATUS

Malcolm C. Forgrave, Cedar, Mich., assignor to Leelanau Industries, Inc., Cedar, Mich.

Filed Oct. 15, 1973, Ser. No. 406,377
Int. Cl. A63f *3/00*
U.S. Cl. 273—135 D **13 Claims**

Apparatus for playing a competitive scoring game including a game board and a plurality of playing pieces. The playing pieces include a plurality of elongated rod-like elements each

having a plurality of individual discrete faces upon which reference indicia is provided. Each discrete face is separated from an adjacent face by a slot or groove. The slot forms interlocking means adapted to mate with upstanding projections on



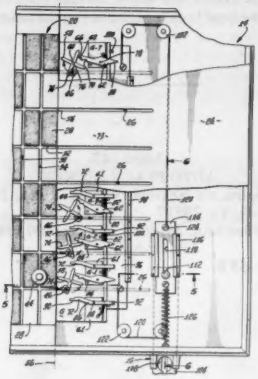
the game board such that they may be positioned in parallel, side-by-side relationship on the board. Reference indicia is provided on the board to indicate a row of selected faces on each playing piece as they are arranged on the board to form words or the like.

3,836,151
GAME BOARD
William R. Bowerman, 1824 Mississippi, Lawrence, Kans. 66044
Filed Feb. 26, 1973, Ser. No. 335,473
Int. Cl. A63f *3/02*
U.S. Cl. 273—136 E **2 Claims**

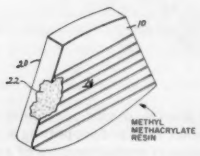
A self-storing game apparatus is provided in which a pliable game board or panel having a suitable game design emplaced thereon, such as by embossing, and a plurality of game playing pieces adapted to be selectively arranged on the panel in accordance with the design are made of a common material, as for example vinyl or the like, having a characteristic which causes the pieces to adhere to the panel when in direct contact therewith. The pliable nature of the vinyl permits folding of the panel for storage purposes as, for example in the user's pocket, purse, desk, etc., without the likelihood of the playing pieces being readily dislodged from their positions when the panel is folded. A sheet of dissimilar material is placed between the pieces when the panel is folded to keep them from sticking to each other.

3,836,152
CONTROLLED USE CHESS GAME APPARATUS
Terence A. Tintorri, 2312 W. Verdugo Ave., Burbank, Calif. 91506
Filed Aug. 3, 1973, Ser. No. 385,546
Int. Cl. A63f *3/02*
U.S. Cl. 273—136 F **12 Claims**

A coin-operated chess game in which turnstiles are provided at a series of groove extensions beyond the playing field whereby taken pieces are stored to the side of the playing field and are not returnable except upon payment of a coin, and actuation of a plunger to permit turnstile operation, to return the taken game pieces to the board.



3,836,153
INSERT FOR A GOLF CLUB HEAD
Harry Dance, Jr., 2433 Fifth Ave., Knoxville, Tenn. 37917
Filed Mar. 26, 1973, Ser. No. 345,242
Int. Cl. A63b *53/04*
U.S. Cl. 273—173 **2 Claims**

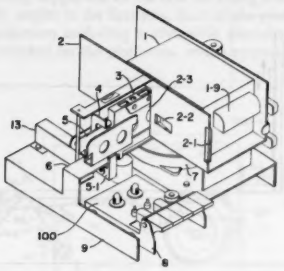


A golf club having a head portion including a face adapted to strike a ball and an insert mounted on the face. The insert consists essentially of a molded piece prepared by curing a suspension polymerized polymethyl methacrylate powder, including from 2 to 5 percent of a butadiene styrene copolymer containing at least 65 percent butadiene grafted thereto, and a liquid consisting essentially of methyl methacrylate and glycol methacrylate as crosslinking monomers at a temperature at least about 170° F.

3,836,154
AUTOMATIC CASSETTE RECORDER REPRODUCER
Mitsuo Ishikawa, Okaya, Japan, assignor to Bell & Howell Company, Chicago, Ill.
Filed Mar. 13, 1973, Ser. No. 340,786
Claims priority, application Japan, Apr. 4, 1972, 47-33786
Int. Cl. G11b *5/00*
U.S. Cl. 360—92 **9 Claims**

A tape recorder-reproducer having an improved mechanism for loading any one of a plurality of cassettes from a magazine into a holder means for rotating the holder means to invert the cassette to position each of two magnetic tracks on a tape in an effective position for recording or reproduc-

tion, for unloading the cassette from the holder means into the magazine and for advancing the magazine to permit repeating



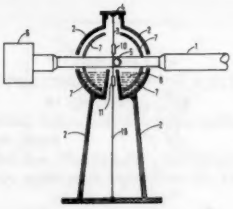
the cycle. In addition, the improved mechanism enables the cycle to be stopped and allows any cassette to be repeated continuously, automatically.

3,836,155

PHONOGRAPH RECORD PLAYER TONE ARM ASSEMBLY

Constantinos J. Joannou, 2008 Dorval Ave., Ottawa, Ontario, Canada (K1G 2N8)

Filed Feb. 12, 1973, Ser. No. 331,389
Claims priority, application Canada, Feb. 21, 1972, 135161
Int. Cl. G11b *3/18*
U.S. Cl. 274—23 R **3 Claims**



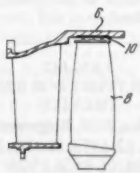
In modern phonograph record players, where needle pressure is low and needle compliance is high, friction in the tone arm bearings is not tolerated. This invention provides for a tone arm system in which static friction is eliminated by using a stretched chord suspension and viscous fluid to dampen oscillations.

3,836,156

ABLATIVE SEAL

Hector B. Dunthorne, Verdun, Quebec, Canada, assignor to United Aircraft of Canada Limited, Longueuil, Quebec, Canada

Filed Aug. 19, 1971, Ser. No. 173,321
Int. Cl. F16j *15/44;* **F01d** *11/08*
Claim priority, application Great Britain, July 19, 1971, 33696/71
U.S. Cl. 277—53 **6 Claims**



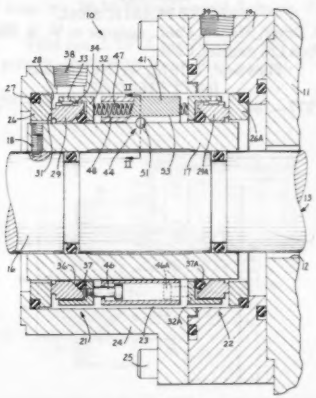
A composite sealing structure for sealing the gap between stationary and moving surfaces of a gas impelling device, for example a turbine. Preferably, the sealing structure is on the surface of the stationary member. The sealing structure is adapted, in the event of a rub, to melt immediately at the rubbed surface whereby the metal is molten and readily displaced to allow free passage of the rubbing surface of the other member. The sealing structure includes an outer sealing layer as the proximate surface of one member and an intermediate bonding layer bonding the sealing layer to the surface of the member. The sealing layer is of a metal alloy having a melting point close to, but above the operating temperature in the impelling device and below the melting point of the surface of the one member. The bonding layer is of an alloy compatible with the sealing layer alloy and with the base metal, forms a firm bond with both the sealing layer and the base metal surface, is adapted to melt initially at a temperature lower than that of either, has a remelt temperature above the operating temperature of the impelling device, and good strength at the operating temperature. Preferably, the alloys used for the sealing and bonding layers are brazing alloys.

3,836,157

DOUBLE SHAFT SEAL WITH BALL DRIVE KEY

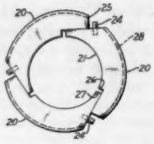
Herbert B. Hummer, Kalamazoo, Mich., assignor to Duralmetallic Corporation, Kalamazoo, Mich.

Filed Jan. 29, 1973, Ser. No. 327,800
Int. Cl. F16j *15/34*
U.S. Cl. 277—62 **12 Claims**



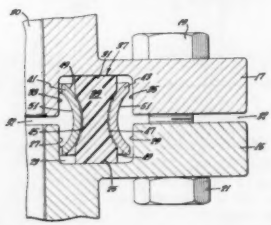
A mechanical seal construction for sealing a shaft with respect to a housing. The seal construction includes a pair of opposed and substantially identical seal assemblies, disposed within a fluid chamber defined between the housing and the shaft. The pair of seal assemblies include a pair of rotatable seal units which are disposed directly opposite one another and are nonrotatably connected to the shaft by means of an intermediate collar. The shaft is provided with a substantially hemispherical recess in the periphery thereof, in which is disposed a ball. The collar has an axially elongated keyway of substantially rectangular cross section into which projects the ball. The keyway is defined by substantially parallel side walls which are spaced apart by a distance slightly greater than the diameter of the ball so that the ball engages the keyway at a substantially single point of contact to nonrotatably connect the collar to the shaft while permitting free axial displacement therebetween.

3,836,158
PACKING RING
Clifford C. Davison, Pittsburgh, Pa., and Reinhold A. Ott, Long Beach, Calif., assignors to Gulf Oil Corporation, Pittsburgh, Pa.
Filed Mar. 7, 1973, Ser. No. 338,904
Int. Cl. F16j *15/24*
U.S. Cl. 277—146 **3 Claims**



A reciprocating action rod is equipped with a packing ring positioned around the rod to prevent the escaping of fluids, said packing ring comprising a plurality of generally arcuately-shaped sections containing pin stop members positioned therein to limit the inward movement of the ring sections and so prevent damage to the reciprocating rod.

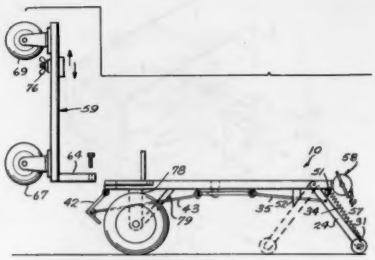
3,836,159
CAPTIVE PLASTIC SEAL
Eldon O. Dryer, Malibu, Calif., assignor to W. S. Shamban & Co., West Los Angeles, Calif.
Filed Sept. 7, 1972, Ser. No. 287,045
Int. Cl. F16j *15/12*
U.S. Cl. 277—180 **12 Claims**



A seal comprising a sealing ring of deformable sealing material having inner and outer peripheral surfaces and inner and outer retainer rings. Each of the retainer rings is concave in axial cross section and is resiliently deformable in the radial direction.

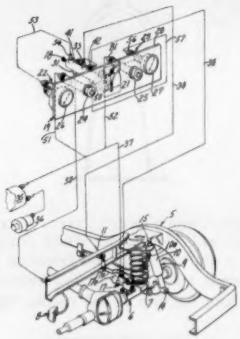
3,836,160
STAIR ASCENDING OR DESCENDING CART
E. Partridge Linsley, 310 Charbett, Little Rock, Ark. 72204
Filed Dec. 6, 1972, Ser. No. 312,489
Int. Cl. B62b *5/02*
U.S. Cl. 280—5.32 **8 Claims**

A cart is disclosed for assisting one in moving an object up or down stairs. Rear wheels rotatable about a fixed axis and rotatable front wheels mounted movably with respect to the rear wheels are provided. The front wheels are spring-biased toward a forward position with respect to the rear wheels. A pull back system is provided for allowing stair descent by pulling the front wheels toward a backward position relative to



the rear wheels after the front wheels have cleared an upper step as a result of backward pivoting of the cart about the rear wheel axis.

3,836,161
LEVELING SYSTEM FOR VEHICLES WITH OPTIONAL MANUAL OR AUTOMATIC CONTROL
Walter T. Buhl, Ann Arbor, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed Jan. 8, 1973, Ser. No. 321,686
Int. Cl. B60g *17/04*
U.S. Cl. 280—6 H **10 Claims**

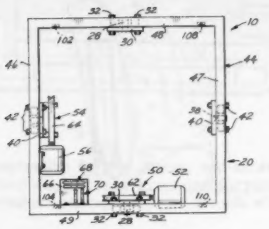


Level-control apparatus for a vehicle suspension system including pneumatic spring devices wherein the body-supporting pressure may be varied automatically in accordance with vehicle loading to maintain a constant average spacial relationship between the body and axle, or to vary the effect of each device on the vehicle by manual individual control. A distribution valve located intermediately in the control system between an air pressure source and the pneumatic devices is operable to shift the system from selective manual adjustment of the pneumatic devices to automatic adjustment of the devices in response to load.

3,836,162
SELF-LEVELLING SUPPORT FOR REFRIGERATOR OR THE LIKE
Floyd R. Felkner, Rt. Box 2030, Ridgecrest, Calif. 93555
Filed Apr. 12, 1973, Ser. No. 350,382
Int. Cl. B62d *37/00*
U.S. Cl. 280—6 R **9 Claims**

An automatic self-levelling device for supporting an appliance on a motor vehicle, where the appliance must be kept level for optimum performance, comprising a base, a first plat-

form, and a second platform; said first platform being supported on the base for tilting about a first axis, and the second platform being supported on the first for tilting about a second axis at right angles to the first axis. Each of the platforms has a tilting mechanism including a reversible electric motor, and mercury switches on the platforms, which respond to any tilting of the platforms with respect to the horizontal about either axis, to energize the respective electric motor, thereby driving the tilting means in the direction to level the platforms. The levelling switches and electric motors are connected in a circuit to the battery and ignition switch of the car, so that the system is energized when the ignition switch is turned off, and de-energized when the ignition switch is turned on.

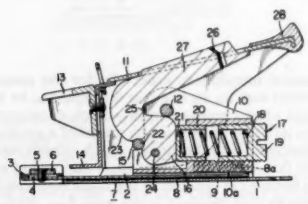


3,836,163

HEEL SUPPORTING DEVICE FOR A SKI SAFETY BINDING

Noriyasu Hashioka, Tokyo, Japan, assignor to Hope Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 10, 1972, Ser. No. 305,614
Claims priority, application Japan, Nov. 25, 1971, 46-94132
Int. Cl. A63c 9/08
U.S. Cl. 280—11.35 T **5 Claims**



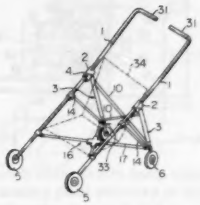
A heel supporting device which forms a part of a ski safety binding that automatically opens when an excessive force is exerted on the ski boot. The heel supporting device includes heel holding means which comprise a pin secured to a casing, a lever pivotably connected to a supporting member and adjustable spring means for pressing the lever to the pin. The lever has a notch and a curved face contiguous to the notch. The pin is engaged in the notch at a normal position of use and is disengaged from it to release the heel of the ski boot when a strong upward directed force is applied to the heel. When the skier steps down his boot to fit it with the ski binding, the pin slides along the curved face of the lever and engages in the notch without pushing the lever against the force of the spring thereby facilitating connection of the ski boot to the ski binding.

3,836,164

COLLAPSIBLE CARRIER

Akira Sugino, and Takao Ota, both of Kyoto, Japan, assignors to Nintendo Co., Ltd., Kyoto, Japan

Filed Nov. 17, 1972, Ser. No. 307,551
Claims priority, application Japan, Dec. 23, 1971, 46-2216
Int. Cl. B62b 11/00
U.S. Cl. 280—41 A **2 Claims**



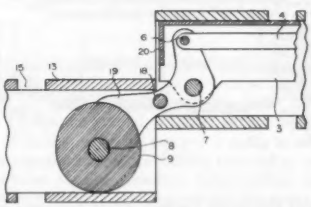
A carrier, which is collapsible by single operation without detaching any parts and all wheels of which are gathered at the lower portion of the carrier when the carrier is folded, whereby the folding can be easily effected and there is no apprehension of soiling clothes during the folding operation.

3,836,165

WHEEL LIFT DEVICE IN A PALLET TRANSPORTING FORK-LIFT CART

Masataro Sato, No. 28-26 Fukuokamachi 2-chome, Takamatsu, Japan

Filed Jan. 3, 1973, Ser. No. 320,740
Claims priority, application Japan, Mar. 7, 1972, 47-27653
Int. Cl. B62d 6/12
U.S. Cl. 280—43.12 **2 Claims**



A pallet transporting fork-life cart is disclosed with an improved wheel lift device attached to the front of the fork. A forwardly curved wheel crank, rotatably connected to the front of the fork and responsive to the hydraulic lift mechanism, holds the forward lift wheel at a portion forward of the front of the fork. A pinched portion on the wheel crank permits the pallet being transported to be positioned directly behind and contacting a previously placed pallet regardless of whether single-or-double plane pallets are being used.

3,836,166

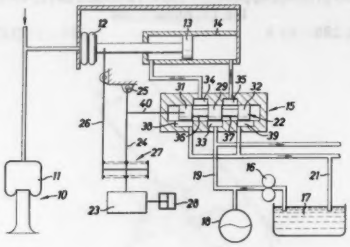
PNEUMATIC SUSPENSION SYSTEMS FOR VEHICLES

Wilfred Nicholas Bainbridge, and Robert Hazell Pitcher, both of Leamington Spa, England, assignors to Automotive Products Limited, Leamington, Spa, Warwickshire, England

Filed Nov. 13, 1972, Ser. No. 306,053
Int. Cl. B60g 17/00
U.S. Cl. 280—124 F **3 Claims**

A pneumatic vehicle suspension system in which the part of the weight of the vehicle supported by each wheel is trans-

mitted thereto through compressed gas contained in a variable volume chamber, the variable volume chamber associated with each wheel being included in a gas-containing system the volume of which is arranged to be varied by control means



responsive to dynamic forces acting in at least one horizontal direction to vary the weight distribution between the vehicle wheels, so as to resist tilting of the vehicle due to the changed weight distribution, the response of said control means being limited by feed-back mechanism.

3,836,167

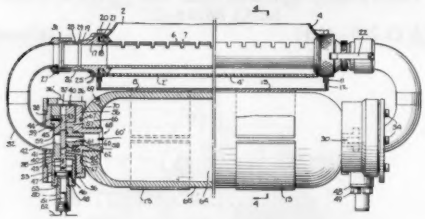
VEHICLE SAFETY APPARATUS

Kenneth R. A. Wilson, Fort Erie, Ontario, Canada, assignor to Irvin Air Chute Ltd., Ontario, Canada

Filed Sept. 27, 1971, Ser. No. 184,102

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **4 Claims**



An inflator system for a vehicle safety apparatus including an inflatable bag which uses a gas container having two exit orifices either or both of which may be used at the time of a collision to inflate the bag.

3,836,168

PERSONAL SAFETY DEVICE FOR USE IN VEHICLES

Kohei Nonaka; Masaho Tanaka, both of Tokyo; Takeshi Maki, Kawasaki; Ikuo Harada, Tokyo, and Masafumi Hamasaki, Nobeoka, all of Japan, assignors to Asaki Kasei Kogyo Kabushiki Kaisha, Osaka, Germany

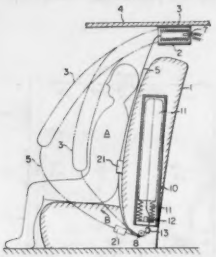
Filed Nov. 23, 1971, Ser. No. 201,322

Claims priority, application Japan, Nov. 30, 1970, 45-104913

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **2 Claims**

The invention relates to a personal safety device for protecting an occupant of a vehicle in the event of an accident. The device includes confining means, e.g., a net or cloth for retaining the occupant in close proximity to his seat, the confining means being normally in a gathered or folded condition adjacent to the occupant's seat. Gas generating means, e.g., a cylinder of compressed gas or a combustible chemical, is provided for projecting the confining means in front of the occupant and the device embodies means for drawing and tightening the confining means around the occupant's body. Operation of the device takes place automatically on detection by sensing means in the vehicle of an acceleration exceeding a predetermined magnitude.



3,836,169

PROTECTIVE DEVICE, ESPECIALLY FOR THE PASSENGERS OF MOTOR VEHICLES

Gerhard Schiesterl, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft

Filed Mar. 10, 1972, Ser. No. 233,418

Claims priority, application Germany, Mar. 12, 1971, 2111898

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **27 Claims**

A protective installation, especially for the passengers of motor vehicles with an air bag that is adapted to be automatically inflated when a predetermined vehicle deceleration is exceeded; the inflation takes place by means of a gas whereby an insert is associated with the air bag which extends transversely to the main flow direction of the gas, is disposed at a distance to the bag bottom, in relation to the main flow direction and forms within its area disposed in the main flow of the inflating gases a deflecting surface for the inflowing gases.

3,836,170

DEVICE FOR THE INFLATION OF SAFETY CUSHIONS IN VEHICLES

Ernst Grosch, Hennef/Sieg; Heinz Gawlick, Furth; Hellmut Bendler, Erlangen-Spardorf, and Karl-Egon Flach, Cologne, all of Germany, assignors to Dynamit Nobel AG., Troisdorf, Germany

Filed Apr. 24, 1972, Ser. No. 246,944

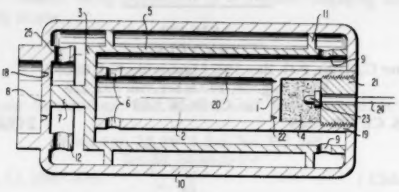
Claims priority, application Germany, Apr. 26, 1971, 2120277

Int. Cl. B60r *21/08*

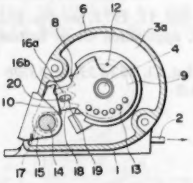
U.S. Cl. 280—150 AB **24 Claims**

Device for the inflation of safety cushions in motor vehicles wherein a single electrically actuatable charge is disposed in a

case provided in one end of a container filled with gas under pressure, one side of said case facing the other end of said container being rupturable by said charge, and an axially displaceable member disposed in said container for rupturing the end of said container upon rupture of the one side of said case.



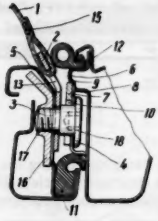
3,836,171
SAFETY BELT LOCKING DEVICE
Yoshihiro Hayashi, Toyota, and Masahiro Iwatsuki, Anjyo, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusko, Aichi-ken, Japan
Filed July 7, 1972, Ser. No. 269,737
Claims priority, application Japan, July 7, 1971, 46-50088; July 7, 1971, 46-50089
Int. Cl. B60r 21/10
U.S. Cl. 280—150 SB **6 Claims**



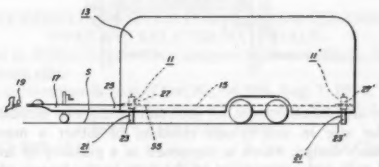
A safety belt locking device for use in a vehicle for automatically locking a belt in the event of an accident of the vehicle in order to prevent the passenger fastened by the belt from further injuries, which includes synchromesh means for synchronizing a pawl plate with a lock gear rigidly mounted on a shaft upon which the belt is wound, thereby permitting engagement between the pawl plate and the lock gear for locking the belt.

3,836,172
SAFETY BELT FASTENING
Christian Hildebrandt, Wilsche, Germany, assignor to Volkwagenwerk Aktiengesellschaft, Wolfsburg, Germany
Filed Oct. 3, 1973, Ser. No. 403,268
Claims priority, application Germany, Oct. 6, 1972, 2249005
Int. Cl. B60r 21/10
U.S. Cl. 280—150 SB **7 Claims**

A safety belt fastening for the end of a motor vehicle safety belt which has one of its ends attached to a portion of the vehicle door. The end of the safety belt is attached to a fitting which is securely attached by means of a locking bolt to a portion of the frame member of the door. The locking bolt has a head portion which is brought into force transmitting relation to a portion of a holding plate mounted in the door column of the vehicle body when the door is closed.



3,836,173
ANTI-THEFT STRUCTURE FOR TRAVEL TRAILERS
John E. Schwaiger, 7556 Raleigh La Grange Rd., Cordova, Tex. 38018
Filed July 20, 1973, Ser. No. 381,365
Int. Cl. B60s 9/00
U.S. Cl. 280—150.5 **7 Claims**

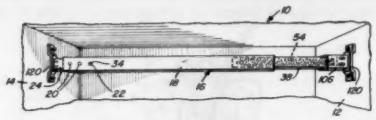


Anti-theft structure for travel trailers including fore and aft spurs depending from the fore and aft ends of the trailer. In normal use, the spurs do not support the trailer but rather thrustingly engage the ground, or other surface upon which the trailer is resting, when an attempt is made to move the trailer. The respective spurs are slidably received in vertically disposed tubular housing members which define openings through the floor of the trailer. Accordingly, the upper ends of the spurs are accessible only from the interior of the trailer. Thus, when the door to the trailer is locked, access to the upper ends of the spurs is denied. The upper ends of the spurs are securely held in selected ones of several extended vertical positions by holding structure which may be actuated only from the interior of the trailer. Additionally, the respective holding structure may be secured to the housing members by suitable padlocks or the like to provide further assurance against unwarranted removal of the spurs.

3,836,174
CARGO BEAM
Robert E. Holman, Jr., 114 E. Rick Cir., Dallas, Tex. 75230
Filed Oct. 16, 1972, Ser. No. 298,002
Int. Cl. B60p 7/00
U.S. Cl. 280—179 R **6 Claims**

An adjustable length shoring beam including an elongated center section, a first end section supported from and lengthwise adjustable and retractable relative to one end of the center section and a second end section supported from and lengthwise freely shiftable relative to the other end of the center section between maximum and minimum extended

positions. Spring structure is provided for biasing the second end section toward its fully extended position and the opposite

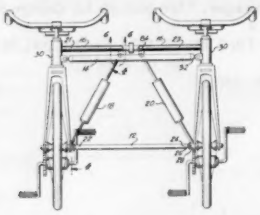


ends of the shoring beam comprising the remote ends of the end sections include structure for releasable anchored engagement with wall supported anchor structure.

3,836,175
BICYCLE FOR TWO

Joseph B. Pomerance, 125 Vista Ln., Miami, Fla. 33156, and Jesse Haywood Burke, 3650 Ashford-Dwd'y Rd. N.E. Apt. 6J, Atlanta, Ga. 30319

Filed Dec. 13, 1972, Ser. No. 314,730
Int. Cl. B62k *13/06*
U.S. Cl. 280—209 **7 Claims**

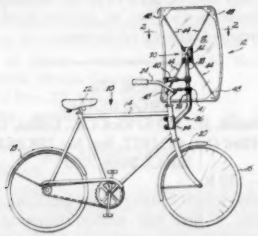


An attachment means for interconnecting two bicycles of similar size in side-by-side relation, of either a man or woman's design, which is composed of a plurality of lateral rigid rods and connections of the rods to the frames of the bicycles through hinge means at the rear compensating for relative vertical displacement of the bicycles through a hinge type action, which includes shock absorber means, and ball and socket means on the rigid bars interconnecting the forward end of the bicycle frames and steering columns of the bicycles.

3,836,176
BICYCLE SAIL

Carl J. Ylvisaker, 133 Harding Blvd., Oregon City, Oreg. 97045

Filed Dec. 8, 1972, Ser. No. 313,553
Int. Cl. B62j *39/00*
U.S. Cl. 280—213 **6 Claims**

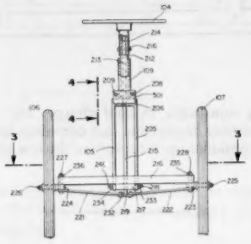


Apparatus for sailing a bicycle including a base adapted for detachable mounting on the front of a bicycle, an upright mast removably journaled on the base for turning about a generally upright axis, a sail mounting assembly removably attached to the mast, and a transparent sail removably mounted on the sail mounting assembly.

3,836,177
TRICYCLE

Peter C. Heidt, P.O. Box 163, Masonville, N.J. 08054

Filed Aug. 28, 1973, Ser. No. 392,226
Int. Cl. B62k *5/08*
U.S. Cl. 280—269 **2 Claims**

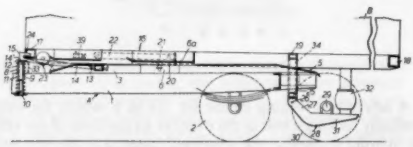


The front wheel is removed from a bicycle, and a transverse axle is attached to the steering fork. The fork is in turn secured to the bicycle frame. A steering shaft connects the handle bars through the fork and head tubes to a pivotal joint with the axle. Tie rods translate force applied at the shaft to wheels which are pivotally disposed at the axle extremities.

3,836,178
DEMOUNTABLE LOAD CARRYING BODIES

Rowland Herbert Ham, Charvill, England, assignor to Ronway Engineering Company Limited, Southhall, Middlesex, England

Filed Dec. 11, 1972, Ser. No. 313,667
Claims priority, application Great Britain, Dec. 13, 1971, 57837/71
Int. Cl. B62d *53/04, 53/06*
U.S. Cl. 280—415 B **7 Claims**



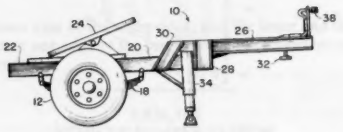
A kit of parts for converting a wheeled vehicle chassis for mounting raised loads thereon, comprising a frame with spaced longitudinal members mountable longitudinally of the chassis, a fifth wheel coupling plate between the longitudinal members in the mid portion between their ends, load guide means at the rear end of the longitudinal members, and a damping device at the front end of the frame, such that when assembled on the vehicle chassis enables the chassis to be moved longitudinally beneath a raised load until a kingpin on the mid underside portion of the load engages the fifth wheel coupling plate and a member at the rear of the load engages the guide means while the damping device is engaged by the forward part of the load. A second kit may be used with said kit, comprising a load supporting frame having spaced longitudinal members rigidly connected by front and rear transoms, a kingpin supported on said members, rollers on the forward ends of said members to ride on the longitudinal frame mem-

bers of said first kit, and retractable leg supports at the forward and rear ends of said members of said second kit, said front transom cooperating with said damping device and said rear transom being connected to a member engaging said guide means.

3,836,179
TRAILER CHOCK

Donald G. Jennings, 133 Decker Ave., Staten Island, N.Y. 10302

Filed Apr. 23, 1973, Ser. No. 353,345
Int. Cl. B62d *53/04*
U.S. Cl. 280—476 **1 Claim**

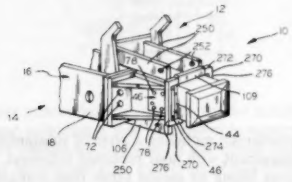


A chock to secure a trailer at a loading dock has a frame supported by road wheels, a fifth wheel on the frame to mount the front of a trailer, pony wheels in front of the road wheels to support the front of the frame, and a king pin extending downward from the front of the frame so that the chock can be moved by a tractor. Brakes lock the chock road wheels when tractor air pressure is removed therefrom.

3,836,180
CUSHIONED BUMPER FOR SCRAPERS

Wajih Kanjo, Midlothian, Ill., assignor to Cardwell Westinghouse Company, Chicago, Ill.

Filed Oct. 25, 1973, Ser. No. 409,579
Int. Cl. B60r *19/08*; **B60d** *3/00*
U.S. Cl. 280—481 **8 Claims**

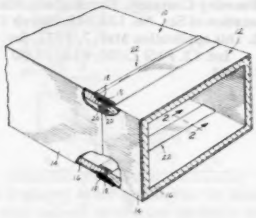


A cushioned bumper for ground scrapers comprising a housing adapted to be mounted on the rear end of the scraper in a generally horizontal postion and extending longitudinally of the scraper, with the housing carrying a pair of internal stop elements, a tubular plunger structure reciprocably mounted in the housing and carrying stop lugs, adapted to engage the respective housing stop elements, and a buffer plate exposed exteriorly of the housing against which the blade of a bulldozer or the like will engage to push the scraper when struck, and a composite cushioning arrangement interposed between the housing and the plunger including spring means to bias the plunger structure outwardly against the housing stop elements, in which the sides of the housing are equipped with special stiffener elements that hold the housing stop elements and the housing side walls bearing same against displacement laterally outwardly of the housing due to recoil and the lateral forces due to the bulldozer working against the plunger in rough terrain.

3,836,181
CLEAT FOR JOINING DUCT WORK

Donn E. Kelver, Rte. 3, Box 264, La Porte, Ind. 46350

Filed June 7, 1973, Ser. No. 367,717
Int. Cl. F16l *59/16*
U.S. Cl. 285—55 **6 Claims**

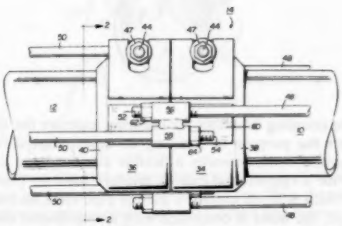


A cleat which is used for joining ducts and which includes S-shaped folds for accommodating the marginal portions of the duct walls. The cleat includes a leg which projects from the S-shaped folded portion of the cleat and which terminates in a generally right angular flange. The leg and right angular flange serve as strengthening members for the cleat and can be utilized to accommodate the edge portion of an insulative or similar type liner extending along the interior of the ducts.

3,836,182
PIPE COUPLING SYSTEM FOR GLASS OR CERAMIC PIPES AND RELATED MATERIALS

James G. Miller, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

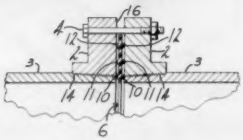
Continuation-in-part of Ser. No. 64,386, Aug. 7, 1970, abandoned. This application Nov. 17, 1972, Ser. No. 307,584
Int. Cl. F16l *13/04*, *35/00*
U.S. Cl. 285—114 **14 Claims**



A coupling system suitable for use with glass or ceramic pipes or pipes made of similar material used in the chemical processing industry, which includes an inner seal member or gasket at the junction of the pipes. The pipe ends may be straight cut or beaded or one of the pipe ends may be beaded and the other pipe end may be straight cut. A sleeve of molded elastomeric materials surrounds the center gasket inner seal which is provided with internal retaining means to retain the seal and which inner radial surfaces adjacent of the seal are provided with a plurality of radial slots to expose a plurality of non-molded ragged edges to the relatively smooth surface of the glass or ceramic pipe for maximum gripping action. A metal band or strap is placed around the elastomer sleeve and is clamped around the pipes and provided with tightening means. In the case of a dual coupling member, to be used for connection of unbeaded pipe ends or to adapt the system to high pressure use, axially extending tie rods are provided to transmit tensile forces from one coupling member to another,

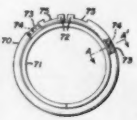
while the collar tightening means aids in compressing the elastomer sleeve or elastomer sleeves tightly against the exterior surfaces of the confined pipe ends in tight sealing contact with the inner seals or gasket.

3,836,183
FLANGE JOINT
Billy J. Battle, Birmingham, Ala., assignor to United States Pike and Foundry Company, Birmingham, Ala.
Continuation of Ser. No. 125,045, March 17, 1971, abandoned. This application Mar. 7, 1973, Ser. No. 338,804
Int. Cl. F16l *23/00*; F16j *15/00*
U.S. Cl. 285—363 **5 Claims**



A flanged joint with a ribbed resilient gasket effecting a fluid tight seal between the faces of two flanges and also effecting an axial seal between a flange and an annular member where the flange is detachably secured to the annular member.

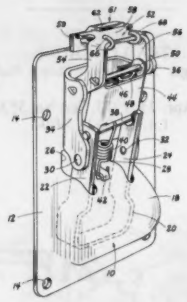
3,836,184
PIPE COUPLING
Frank Gregory, 6620 Woodchuck Hill Rd., Jamesville, N.Y. 13078
Continuation-in-part of Ser. No. 147,975, May 28, 1971, abandoned. This application Apr. 26, 1972, Ser. No. 235,534
Int. Cl. F16l *21/06*
U.S. Cl. 285—417 **11 Claims**



A pipe coupling assembly for securing together the ends of pipes, for the purpose of allowing an uninterrupted flow of fluid therebetween, whereby a flexible circular band is combined with a ring-shaped clip or another band to provide a clamp which is fitted around a pair of pipe ends. In one embodiment, the band is combined with a ring-shaped clip and the ends of the clip are twisted and locked together thereby exerting pressure directed radially inward around the circumference of the band such that the band grips both pipes, thus securing the pipe ends tightly together. In another embodiment, an outer band has shoulders which can be gripped with a pair of pliers and drawn together with the clamp being secured by detent action between an interior band and the exterior band or a ring-shaped clip. Alternatively, the band may be formed integrally with one pipe end and adapted to fit around the other pipe end.

3,836,185
REPAIR DEVICE FOR LOCOMOTIVE HOOD DOOR LATCHES
Roy H. Touchstone, P.O. Box 2003, Jackson, Tenn. 38301
Filed July 26, 1972, Ser. No. 275,210
Int. Cl. E05c *19/18*
U.S. Cl. 292—1 **1 Claim**

A repair device for the hood door latch of a locomotive and comprising a substantially U-shaped element which may be easily secured to the door latch for restoring the door latch to an efficient latching operation without removal of the latch



from the door and without alteration of the latch structure itself.

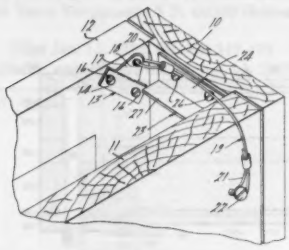
3,836,186
LOCK MECHANISM FOR FREIGHT CAR DOORS
Harvey J. Kennedy, 127 Bauer Ln., Eugene, Oreg. 97402
Filed May 10, 1973, Ser. No. 358,875
Int. Cl. E05c *1/04*; E05b *65/14*
U.S. Cl. 292—189 **2 Claims**

A lock mechanism including a plate of substantial mass for locking engagement with door mounted followers. The plate mass requiring lifting by means other than manual effort to prevent unauthorized entry into the car. Limited vertical travel of the plate engages inclined plate surfaces with the door mounted followers to impart initial opening movement to the door. Plate travel in an opposite direction imparts final closing movement to the door. The plate is adapted to receive lifting instrumentalities such as a lift truck fork for door opening purposes.

3,836,187
TWO-DOOR LOCK DEVICE
Larry H. Buettner, 23825 Battelle, Hazel Park, Mich. 48030
Filed May 24, 1973, Ser. No. 363,584
Int. Cl. E05c *17/04*
U.S. Cl. 292—262 **9 Claims**

A two-door lock device for locking a building inner door that swings inward to a building outer door that swings outward, to lock the doors against unauthorized opening of the

doors of the building from the outside. The lock device includes an elongated wire cable having the outer end attached



to the inner side of the outer door, and the inner end thereof passed over one edge of the inner door and secured interior of the inner door.

3,836,188
VEHICLE BUMPER SYSTEM

Gerard T. Klees, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 25, 1973, Ser. No. 354,311
Int. Cl. B60r *19/06*
U.S. Cl. 293—88 **2 Claims**

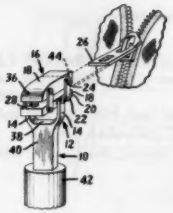
A bumper system particularly adapted for automobile type vehicles and including a face bar assembly supported on the body of the vehicle for fore and aft movement and defining a plurality of bearing surfaces, a plurality of reaction surfaces on the body of the vehicle, a similar reaction surface on the frame of the vehicle, and a plurality of energy absorbing modules disposed between respective pairs of bearings and reaction surfaces, the modules being fabricated from cellular plastic foam adapted for crush or collapse in an energy absorbing mode so that a portion of the kinetic energy of an impact on the face bar assembly is absorbed by the modules while the remainder of the impact load is distributed in predetermined proportion between the body and the frame of the vehicle.

3,836,189
ZIPPER PULL

Dominick Borrelli, 2243 Cropsey Ave., Brooklyn, N.Y. 11214

Filed Feb. 2, 1973, Ser. No. 329,178
Int. Cl. A44b *19/00*
U.S. Cl. 294—1 A **8 Claims**

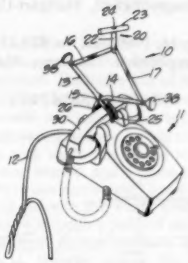
A zipper pull in which a rod having a head thereon adapted to engage a zipper tab is provided. The tab is clampable between two surfaces and the rod movable between a plurality of positions to permit easy insertion of the tab into the head and to permit the rod to be moved to a substantially vertical position to permit the zipper to be closed. In a second embodiment, the tab is placed in an opening in the head of the rod and the rod then moved to vertical position to permit the zipper to be closed.



3,836,190
SPINNING TOOL FOR UNTWISTING PHONE SERVICE CORDS

Lawrence W. Hutson, 1355 3rd St., La Verne, Calif. 91750

Filed Aug. 8, 1973, Ser. No. 386,518
Int. Cl. B65g *7/12*
U.S. Cl. 294—118 **5 Claims**



A spinning tool for untwisting service cords of desk phones comprising tongs having hooked jaws specially shaped to engage the handpiece and customary finger grip across the rear of the phone housing. The tongs include a swivelling handgrip effective to operate the jaws as the handgrip is raised away from the phone and to open the jaws as the phone is lowered against a support surface. While in use to suspend the phone, the swivelling handgrip permits the phone to be rotated in the appropriate direction to remove twists in the phone service cord.

3,836,191
DRIVER CAB OF TRUCKS

Hans Gotz, Sindelfingen, Germany, assignor to Daimler-benz Aktiengesellschaft, Stuttgart, Germany

Filed July 6, 1972, Ser. No. 269,434
Claims priority, application Germany, July 7, 1971, 2133737
Int. Cl. B62d *33/06*
U.S. Cl. 296—1 S **11 Claims**

A driver cab of trucks which has preferably a substantially cubic base shape and is equipped with air guide channels that

extend from the front end wall of the vehicle on the inside of its body to the side walls and discharge thereat; rain ledges are

provided which extend at least within the area of the approximately vertically extending front edges of the driver cab up to approximately the lower edges thereof.

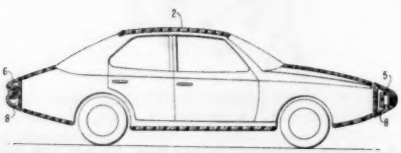
ERRATUM

For Class 296—10 see:
Patent No. 3,836,769

3,836,192
BODY FOR VEHICLES, ESPECIALLY PASSENGER MOTOR VEHICLES

Karl Wilfert, Gerlingen-Waldstadt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed May 16, 1969, Ser. No. 825,215
Claims priority, application Germany, May 17, 1968, 1755512
Int. Cl. B60r *21/14*; B62d *29/04*
U.S. Cl. 296—28 R **23 Claims**



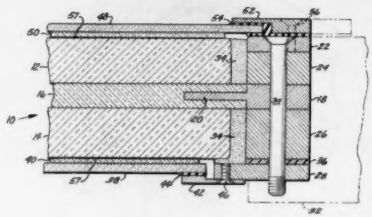
A body vehicles, especially for passenger vehicles, in which the parts of the outer body which are endangered by impacts or which endanger others in case of accidents, are provided with a layer of plastic material, particularly with a layer of elastic and/or plastically yielding synthetic resinous material.

3,836,193
REPLACEABLE SURFACE WINDSHIELDS

John K. Donahoe, Long Beach, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Apr. 2, 1973, Ser. No. 346,737
Int. Cl. B60j *1/06*
U.S. Cl. 296—84 R **4 Claims**

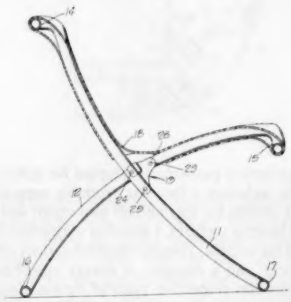
A windshield having a replaceable surface comprising a protective glass sheet having an optical coupling medium attached to the inner surface thereof which is contiguous with the outer surface of the windshield being protected. The optical coupling medium preserves the optical qualities of the assembly while bonded only to the protective shield layer and not to the windshield itself.



3,836,194
FOLDING CHAIR

Kenneth A. Milette, 410 St. Ann's Dr., Laguna Beach, Calif. 92651; Frank D. Garavelli, and Thomas H. Tolleson, both of 1510 Huntington, Murfreesboro, Tenn. 37130

Filed Sept. 11, 1972, Ser. No. 287,776
Int. Cl. A47c *4/44*
U.S. Cl. 297—55 **3 Claims**



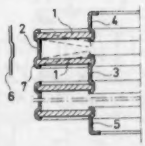
A pair of tubular frame members pivotally join one another, enabling compact folding during non-use and into extended relation for use. A compliant material covers portions of the frame members, forming a sling back and seat readily conforming to the user. A pair of pivot plates affixed at opposite sides of the back frame members includes laterally extending shoulders. The seat frame member is free to rotate in a first direction, bringing the two frame members into substantial nesting registry with one another for the non-use or stacking condition, while rotation in the opposite direction brings portions of the frame member into contact with the laterally extending supporting shoulders to hold the two frame members in the seat configuration during use.

3,836,195

BELLEVILLE DISK SPRING PILLAR ASSEMBLY

Niilo Heikki Teeri, Korppaantie 8 D, 00300 Helsinki 30, Finland

Filed Jan. 13, 1972, Ser. No. 217,479
Claims priority, application Finland, Jan. 13, 1971, 80/71
Int. Cl. F16k *1/34*
U.S. Cl. 267—162 9 Claims



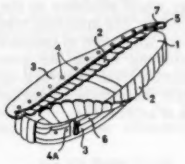
In a spring pillar assembled from planelike or slightly conical Belleville disk springs the Belleville disk springs have been bound into spring pillars one by one in packages alternately at their outer and inner rims with binding rings receiving tensile and pressure loads.

3,836,196

SELF PROTECTIVE SADDLE COVER FOR CYCLE

Chin-I Hu, 56, Ln. 54, Chin Hsi St., Taipei, Taiwan, China

Filed July 31, 1972, Ser. No. 276,422
Int. Cl. A47c *31/02*
U.S. Cl. 297—219 1 Claim



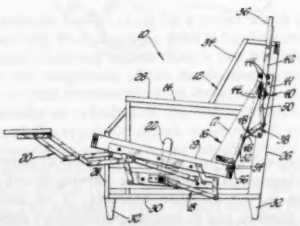
A saddle cover for cycles comprising a layer normally covering a saddle body, and a protective cover forming an extension of the layer, which normally is folded under the layer and affixed to the body and which is used to cover the layer and fastened together with fasteners thereby to protect the layer from the elements.

3,836,197

RECLINER WITH VERTICALLY MOVABLE HEADREST

McKinley Goff, Middletown, and Donald Crum, Louisville, both of Ky., assignors to Middletown Manufacturing Co., Inc., Simpsonville, Ky.

Filed Nov. 24, 1972, Ser. No. 309,586
Int. Cl. A47c *1/10*
U.S. Cl. 297—391 19 Claims



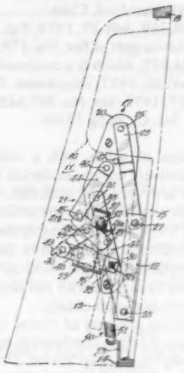
A reclining chair assembly comprising: a support structure; body support means, at least a portion of which is movably supported by the support structure; headrest means movably supported on the support structure; and motion transmitting means for moving the headrest means in response to the movement of the body support means.

3,836,198

MANUALLY MOVABLE HEADREST FOR CHAIRS

Ned W. Mizelle, High Point, N.C., assignor to Hoover-Seng Company, Chicago, Ill.

Filed Jan. 22, 1973, Ser. No. 325,919
Int. Cl. A47c *1/02, 7/36*
U.S. Cl. 297—403 18 Claims



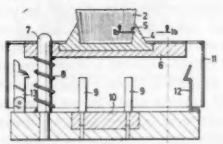
A manually operated linkage means moves a back panel-headrest for a lounge chair between a retracted position and an extended position. Each of a pair of mounting plates on the sides of a cavity in the chair back is connected by a pair of movable links with brackets on the back panel to form four bar linkages, actuating linkage means connects each four bar linkage with a rock shaft, one of the rock shafts is provided with an operating handle, and a cross bar connects the linkages for simultaneous movement. Tension spring means connecting the linkage with the chair back is constantly under tension and moves through a point of maximum tension as the back panel-headrest moves between its retracted and extended positions, thereby urging the back panel-headrest against stops in both said positions.

3,836,199

METHOD AND APPARATUS FOR PRODUCING TUFTS OF HAIR OR BRISTLES

Werner Blankschein, Ohlauerstrasse 2, 8 Munich 50, Germany

Filed Oct. 17, 1972, Ser. No. 298,251
Claims priority, application Germany, Oct. 20, 1971, 2152290, May 5, 1971, 2222152
Int. Cl. A46d *1/10*
U.S. Cl. 300—21 15 Claims



The invention relates to a method of and apparatus of producing tufts of hairs or bristles using a perforated plate and apparatus for use in such a method. The hairs or bristles are introduced from a bundle into holes in the perforated plate using ultrasonic vibrations to facilitate the insertion. Ul-

trasonic vibrations can also be used to shape the tufts to a desired profile prior to setting the hairs or bristles with a binder. The method and apparatus for use therewith have been found of particular value in producing brushes from fine hairs and bristles.

3,836,200

CONVEYING POLYELECTROLYTE FLUIDIZED AQUEOUS SUSPENSIONS OF POWDERED SOLIDS

Robert Ben Booth, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 58,338, July 27, 1970, Pat. No. 3,746,641, which is a continuation-in-part of Ser. No. 179,287, March 7, 1962, Pat. No. 3,524,682, which is a continuation-in-part of Ser. No. 698,429, Nov. 25, 1957, abandoned. This application Nov. 17, 1972, Ser. No. 307,665

Int. Cl. B65g *53/04*

U.S. Cl. 302—66 **4 Claims**

Aqueous suspensions of solids with a wide particle size range having comparatively coarse materials including some larger than 65 mesh and very fine materials including some smaller than 325 mesh settle out with the solids in unclassified and in resuspendable form, when settling in the hindered state under non-Stokes conditions, is effected in the presence of a polymer of the acrylamide-acrylic acid-acrylonitrile type which causes the fines to remain with the large particles and settle out comparatively homogeneously.

This aids in preventing deposits of coarse materials in settling tanks, leach tanks, internal combustion engines and their radiators, heat exchangers, cooling towers, flowing streams in natural or man-made water courses, and mine operations, and the polymer in solution can penetrate into coarse material with fines so that settled material can be resuspended, even if the polymer is introduced after at least some settling has occurred.

3,836,201

WHEEL ASSEMBLIES

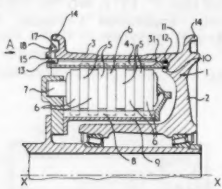
Ian Leonard Stimson, Rugby, and Frederick Sidney Dowell, Benedict Pascal Healy, both of Coventry, all of England, assignors to Dunlop Limited, London, England

Filed July 24, 1972, Ser. No. 274,571

Claims priority, application Great Britain, July 27, 1971, 35228/71

Int. Cl. B60b *19/00*

U.S. Cl. 301—6 A **14 Claims**



A wheel assembly comprising a wheel having disc and rim portions and a drive means in the form of a number of circumferentially spaced drive dogs resiliently mounted adjacent the inner periphery of the rim portion of the wheel and arranged to extend substantially parallel to the intended axis of rotation of the wheel.

3,836,202

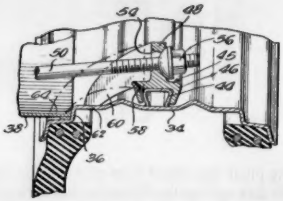
WHEEL CONSTRUCTION

Richard S. Bonomo, Delavan, Ill., assignor to Univerferth Manufacturing Company, Inc., Kalida, Ohio

Division of Ser. No. 855,494, Sept. 5, 1969, abandoned. This application Feb. 16, 1972, Ser. No. 226,781

Int. Cl. B60b *1/06*

U.S. Cl. 301—39 R **16 Claims**



An auxiliary wheel structure for attachment to a regular vehicle wheel which has angularly spaced apart wheel lugs, including an auxiliary wheel rim, an arcuate track fixedly attached to the auxiliary wheel rim, attaching brackets slidably mounted on the arcuate track for adjustment therealong to positions in alignment with the lugs on the regular wheel, and connecting rods between the brackets and the wheel lugs to mount the auxiliary wheel structure to the regular wheel in side-by-side relationship. The attaching brackets embrace the track on the auxiliary wheel rim to permit sliding adjustment therealong but retaining means are provided to prevent removal of the brackets from the track. Lock members are provided to maintain the attaching brackets on the track in any of the positions of adjustment.

3,836,203

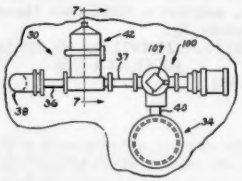
FLUSHING ARRANGEMENT FOR RAILWAY CARS

Wallace Lee Fossett, Weldon Springs Heights, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Jan. 24, 1973, Ser. No. 326,424

Int. Cl. B65g *53/40*

U.S. Cl. 302—53 **5 Claims**

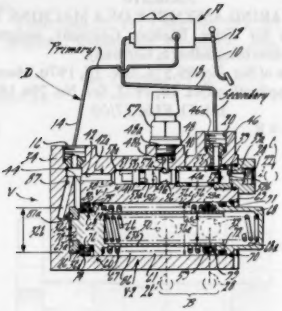


A three-way valve is provided in a conduit (s) running from a pressure chamber in a railroad car allowing in one position the pressure in the pressure chamber to be transmitted through the conduit, and in another position high pressure gas may be applied through the conduit to remove contaminants and moisture therefrom and force the same back into the pressure chamber.

3,836,204
BRAKE SYSTEM PROPORTIONING VALVE

Warren A. Van Wicklin, Jr., Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed July 17, 1972, Ser. No. 272,506
Int. Cl. B60t *11/34*
U.S. Cl. 303—6 C 2 Claims

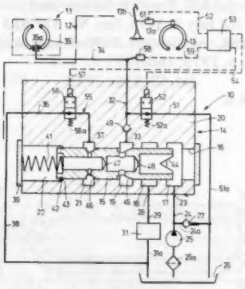


A vehicular braking system having fluid proportioning means between front and rear braking elements effective to maintain rear braking pressure substantially at master cylinder pressure while intensifying the front braking pressure at a multiple thereof above a changeover pressure point.

3,836,205
HYDRAULIC BRAKE SYSTEM FOR TRAILERS CONNECTED WITH MECHANICALLY BRAKED TOWING VEHICLES

Gunther Schwerin, Hohenstaufenstrasse, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed May 23, 1973, Ser. No. 363,046
Claims priority, application Germany, May 25, 1972, 2225357
Int. Cl. B60t *13/68*
U.S. Cl. 303—7 12 Claims

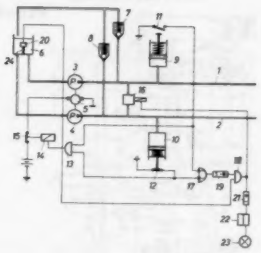


A hydraulic brake system for a trailer which is coupled to a mechanically braked towing vehicle has an electronic regulator circuit receiving signals from a first transducer which indicates the magnitude of the mechanical braking force and from a second transducer which indicates the fluid pressure in the cylinder or cylinders of the hydraulic brake system. The output of the regulator circuit is connected to one or more electromagnetic control valves which control a distributor valve serving to connect the pump with the brake cylinder or cylinders, with a return line and/or with one or more consumers. The regulator circuit insures that the fluid pressure in the brake cylinder or cylinders is always proportional to the mechanical braking force.

3,836,206
HYDRAULIC UNIT

Heinz Leiber, Leimen, Germany, assignor to Teldix GmbH, Heidelberg, Germany

Filed Sept. 28, 1973, Ser. No. 401,805
Claims priority, application Germany, Oct. 12, 1972, 2249956
Int. Cl. B60t *13/16*
U.S. Cl. 303—10 11 Claims

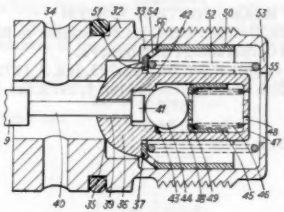


An hydraulic unit for supplying two separate supply circuits comprises two pumps connected to a reservoir, both pumpshaving output lines, piston members for detecting the output pressures and a normally closed valve connecting the output lines and operable in response to detected output pressures which are below a predetermined pressure.

3,836,207
SEPARATING VALVE FOR AN ANTISKID BRAKE SYSTEM

Juan Belart, Walldorf, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 5, 1973, Ser. No. 338,016
Claims priority, application Germany, Apr. 15, 1972, 2218390
Int. Cl. B60t *8/06*
U.S. Cl. 303—21 F 12 Claims



This relates to a pressure actuated separating valve for an antiskid brake system employed in vehicles. The separating valve responds to a control signal indicating danger of a wheel locking condition to interrupt the connection between the master cylinder and a wheel brake cylinder. The separating valve reconnects this connection after the wheel locking danger is over. When the connection is to be reestablished, the master cylinder may have a pressure higher than the pressure in the wheel brake cylinder which if directly connected to the wheel brake cylinder would cause another wheel lock. This is overcome according to the present invention by providing an arrangement within the separating valve that will throttle the pressure rise in the wheel brake cylinder and thereby permit another operation of the antiskid system if necessary before full master cylinder pressure is present in the wheel brake cylinder.

3,836,208

ANTISKID CONTROL SYSTEM

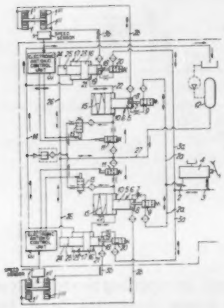
Franz Wienecke, Oberstedten, Taunvs, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Oct. 25, 1972, Ser. No. 300,620

Claims priority, application Germany, Nov. 12, 1971, 2156307

Int. Cl. B60t 8/12

U.S. Cl. 303—21 F 7 Claims



This invention relates to a hydraulic arrangement for an antiskid system employed in a two circuit brake system where each of the two brake circuits control the wheels of a single axle. The hydraulic arrangement includes a plunger unit having a spring-like actuated control element in one of the two brake circuits and a purely hydraulically controlled plunger unit in the other of the two brake circuits. The control chambers of the two plunger units are hydraulically connected in series so that the plunger units operate together particularly in an antiskid control cycle. The arrangement is light-weight, space and cost saving and safe with regards to its antiskid operation while the sense and purpose of the two-circuit braked axle is completely maintained.

3,836,209

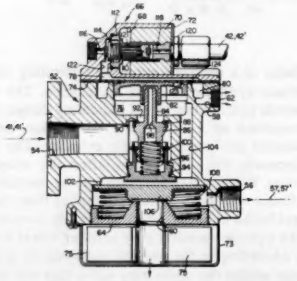
BRAKE CONTROL SYSTEM

James C. Neisch, Orchard Lake, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 214,793, Jan. 3, 1972, Pat. No. 3,743,362. This application Mar. 1, 1973, Ser. No. 337,015

Int. Cl. B60t 8/12

U.S. Cl. 303—21 F 1 Claim



An antiwheel-lock brake control system in which, following the detection of incipient wheel lock, brake apply pressure is initially relieved and thereafter controlled by cyclical time duration modulation of an operator-initiated brake apply pressure.

3,836,210

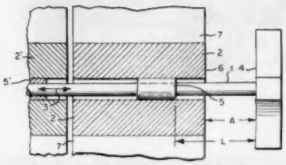
SHAFT BEARING ASSEMBLY OF A MACHINE TOOL

Eberhard van der Horst, Ekelenz, Germany, assignor to A. Monforts, Monchengladbach, Germany

Continuation of Ser. No. 99,576, Dec. 18, 1970, abandoned. This application Oct. 10, 1972, Ser. No. 296,184

Int. Cl. F16c 17/00

U.S. Cl. 308—4 R 6 Claims



Shaft bearing assembly of a machine tool having a shaft that bends under the weight of components mounted thereon and that is both rotatable and longitudinally slidable in a bearing includes a bearing of given length through which the shaft extends, and a diametrically extending bulge on the shaft, the bulge having a surface engaging the bearing and being slidably displaceable with the shaft over a maximum longitudinally extending distance shorter than the given length of the bearing.

3,836,211

REVOLVING ROLLER BEARING ARRANGEMENT

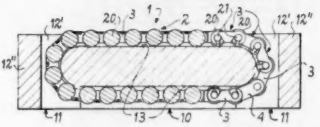
Ernst Pfister-Schneeberger, Roggwil, Switzerland, assignor to W. Schneeberger AG, Roggwil, Switzerland

Filed July 9, 1973, Ser. No. 377,823

Claims priority, application Switzerland, Aug. 28, 1972, 12673/72; Feb. 6, 1973, 1664/73

Int. Cl. F16c 29/00

U.S. Cl. 308—6 R 10 Claims



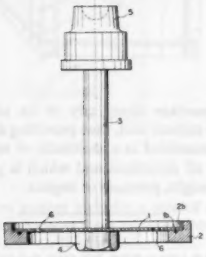
A revolving roller bearing or support arrangement, especially for a roller train or conveyor, comprising a support body having an endless guide track between lateral side plates. An endless roller chain with lateral brackets interconnecting each of two respective rollers bears in a spanned condition upon the endless guide track. At least the majority of oppositely situated brackets are fixedly interconnected by a transverse web into pairs of brackets. Each bracket is equipped with two recesses which have their openings angularly directed with respect to one another and each recess engages with a respective roller journal or axle.

3,836,212

SUSPENSION OF SUPPORTING BODIES FOR SPIRAL GROOVE BEARINGS

Wolfgang Hepp, Immenstaad; Klaus Pimiskern, Friedrichshafen, and Werner Herbert, Markdorf, all of Germany, assignors to Dornier System GmbH, Friedrichshafen, Germany

Filed June 25, 1973, Ser. No. 373,261
Claims priority, application Germany, Aug. 11, 1972, 2239623
Int. Cl. F16c *13/06*
U.S. Cl. 308—15 2 Claims



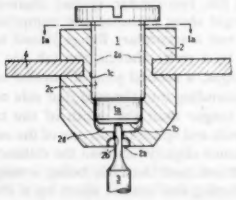
This invention relates to an improvement in an elastic centering suspension of supporting bodies for spiral groove bearings, the improvement comprising a circular membrane having apertures therein and secured to a retaining ring by electron beam welding, whereby the membrane is secured to said ring without deformation.

3,836,213

BEARING ASSEMBLY FOR PRECISION MECHANISMS

Alfred Meisner, Nurnberg, and Walter Spitzl, Heroldsberg, both of Germany, assignors to Firma Diehl, Nurnberg, Germany

Filed Apr. 2, 1973, Ser. No. 346,888
Int. Cl. F16c *17/04*
U.S. Cl. 308—159 4 Claims



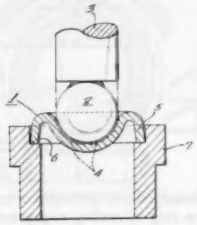
A bearing assembly for precision mechanisms, for absorbing the radial and axial forces exerted on a member to be supported, includes a bearing component supporting a radial force absorbing bushing made of a material having good bearing properties, and an axial force absorbing element held in the component and made of aluminum, with the element surface which is to contact the member having been converted into a metallic oxide.

3,836,214

SPIRAL GROOVE BEARINGS

Sven-Erik Olof Gengard, Partille, and Yngve Lennart Johansson, Goteborg, both of Sweden, assignors to SKF Industrial Trading and Development Company, B.V., Amsterdam, Netherlands

Filed May 22, 1973, Ser. No. 362,864
Claims priority, application Sweden, May 23, 1972, 6657/72
Int. Cl. F16c *17/06*
U.S. Cl. 308—159 5 Claims



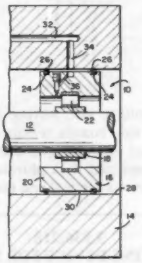
A spiral groove bearing assembly comprising a first bearing member having a convex bearing surface, a second bearing member having a concave bearing surface defining a bearing seat for said first member, means defining a shallow groove pattern in one of said bearing surfaces, said second bearing member being formed of a relatively thin walled disc shaped element to an inverted cuplike form including a center portion defining the concave bearing surface and a depending generally cylindrical skirt portion integral with the central portion and merging therewith in a rounded circumferentially extending edge, said seat conforming closely to the contour of said first convex bearing surface to permit a wide angle of contact between said first and second bearing surfaces, the lower edge of said skirt portion adapted to be secured in a bearing support member.

3,836,215

SHAFT VIBRATION DAMPENING MEANS AND METHOD

Joseph A. Dopkin, Hopewell, N.J., and Paul Hermann, Easton, Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Feb. 15, 1973, Ser. No. 332,618
Int. Cl. F16c *27/00*
U.S. Cl. 308—184 2 Claims

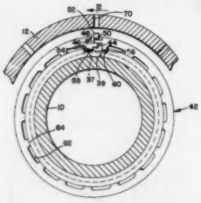


The method comprises the mounting of an annular element directly about a shaft, and in engagement with a shaft supporting structure, and forming a lubricant-filled reservoir between the shaft and structure surfaces. Means, according to one embodiment of the invention for practicing the novel method, comprises a roller bearing, having reservoir-forming walls carried on the outer race thereof, for direct mounting of the inner race on the shaft.

3,836,216
PRESSURE BALANCED SEAL ASSEMBLY

Arnold E. Junker, Bridge, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Apr. 2, 1973, Ser. No. 347,233
Int. Cl. F16c *33/26*; F16j *15/34*
U.S. Cl. 308—187.1 **10 Claims**

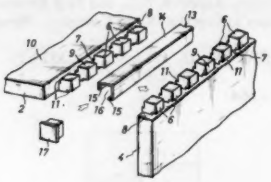


A pressure balanced seal assembly comprising a nonrotatable split carbon ring in sealing engagement with a rotatable shaft. A steel pressure balance ring has a pair of tabs which connect with the free ends of the split carbon ring. The outer periphery of the pressure balance ring is connected to a low pressure discharge so that pressure which acts to urge the carbon ring into the shaft also urges the pressure balance ring outward, thus urging the carbon ring toward an expanded position. This causes the carbon ring to be urged inward against the shaft with a substantially uniform force irrespective of the pressure acting on the carbon ring.

3,836,217
BOX SHAPED FURNITURE UNIT

Seiichi Shiina, 24-15 Toshima 7-chome, Kita-ku, Japan

Filed Aug. 2, 1972, Ser. No. 277,148
Claims priority, application Japan, Aug. 24, 1971, 46-75536; Aug. 24, 1971, 46-75537; Dec. 17, 1971, 46-118630
Int. Cl. A47b *87/00, 87/02*
U.S. Cl. 312—107 **6 Claims**



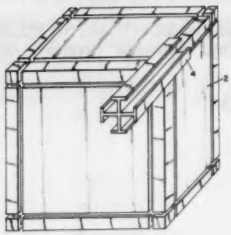
A box-shaped furniture unit having an open front, a top board, right and left side boards, a bottom board, and a back board, all of which are interengaged with each other, the unit being able to be connected to a plurality of other furniture units so as to form various vertical and horizontal arrays.

3,836,218
CONNECTING DEVICE FOR MODULAR CONSTRUCTIONS

Alfred Jean Hallal, 4000 De Maisonneuve Blvd. W., Apt. 913, Westmont, Quebec, Canada

Filed Nov. 24, 1972, Ser. No. 309,164
Int. Cl. F16b *12/02*
U.S. Cl. 312—111 **1 Claim**

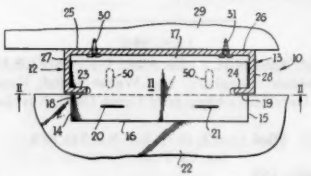
In a system for modular constructions, it is necessary to have a minimum variety of basic components, to provide ease of erection without the aid of particular tools, to allow maximum flexibility to suit any spatial environment and to offer resistance to weight, pressure or impact. In this invention, there are two basic components comprising a basic cubical unit adapted to receive a basic connector item designed for longitudinal insertion along any of its edges, into mating grooves on the cubical unit, thus providing a system which can be manually assembled in a multitude of relatively strong arrangements in all directions and which is greatly resistant to the effects of weight, pressure or impact.



3,836,219
APPARATUS FOR FILING DOCUMENTS

Jack Bernard Guest, and Kathleen Ethel Joyce Guest, both of 119 Albury Dr., Pinner, Middlesex, England

Continuation-in-part of Ser. No. 26,533, April 8, 1970. This application May 3, 1971, Ser. No. 139,410
Int. Cl. A47b *63/00, 97/02*
U.S. Cl. 312—183 **8 Claims**



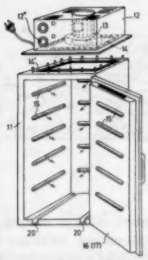
The present invention is concerned with document filing apparatus comprising a rectangular tab for attachment to a leaf of a document file, two similar, spaced channel section rails formed from rigid sheet material and comprising a tab supporting flange and a secondary flange joined to the tab supporting flange by a web, wherein the tab has a first pair of parallel side edges, a second pair of parallel side edges and aligned slots extending into the said first side edges, the slots being slightly longer than the depth of the tab supporting flanges of the rails and spaced from one of the said second side edges by a distance slightly less than the distance between the flanges of each rail and the rails being arranged with their open mouths facing and spaced apart by a distance slightly greater than the distance between the said first side edges of the tab, whereby the tab can be inclined at an angle to the rails, inserted between the rails until the slots are aligned with the tab supporting flanges and straightened so as to extend transversely between the rails with the tab supporting flanges located within the slots to retain the tab and its associated leaf slidably on the rails. The tab supporting flange of each rail can be provided with an upwardly projecting lip extending along the longitudinal edge of the flange and each slot in the tab is then formed with a recess at its inner end, the said recesses being adapted to receive the lips on the rails and thereafter resist rotation of the tab about a vertical axis.

3,836,220

GOODS DELIVERY SYSTEM

Nils Gosta Sigvard Ishammar, Manstigen 5, S-216 18 Malmo, Sweden

Filed Sept. 20, 1972, Ser. No. 290,620
Int. Cl. A47b 77/08
U.S. Cl. 312—236 2 Claims



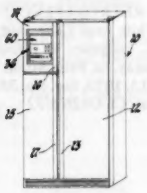
A goods delivery system includes a row of cabinets which are accessible through doors from opposite sides of a wall of a room or other space. On each cabinet there is provided an exchangeable top unit for circulating conditioned air in a closed path through the interior of the cabinet.

3,836,221

REFRIGERATOR DOOR WITH REMOVABLY MOUNTED RADIO

Charles C. Whistler, Jr., Dayton, and Ronald E. Meyer, Troy, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 9, 1973, Ser. No. 404,238
Int. Cl. A47f 1/06; A47c 15/00
U.S. Cl. 312—237 3 Claims



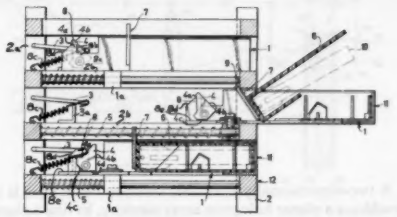
A refrigerator insulated door has a rectangular shaped opening and an insert in the form of a housing installed within the opening for removably mounting an add-on accessory in a recessed manner therein. The accessory, which may be a battery powered radio or the like, is retained in an inwardly canted over-center position by virtue of the housing base being sloped outwardly to a horizontal camming rib. The radio may be readily removed for servicing by exerting a force inwardly at the bottom of its casing, causing the upper portion thereof to be projected beyond the face of the door to a position whereby the top of the radio is exposed for grasping and lifting over lower abutment means of the housing for removal therefrom.

3,836,222

CASSETTE DRAWER UNIT WITH LATCH

Gerd Kuntze, Berlin, Germany, assignor to IDN Inventions and Development of Novelties AG, Lenzerheide, Switzerland

Filed Apr. 16, 1973, Ser. No. 351,790
Claims priority, application Germany, Apr. 18, 1972, 7215173
Int. Cl. A47b 88/04
U.S. Cl. 312—319 4 Claims



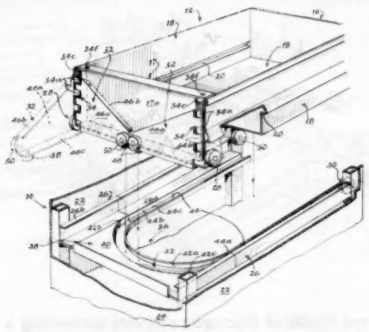
A drawer for cassettes and concealed latch therefor requiring only slight inward pressure to unlatch the drawer. A detent on the drawer and a latch bar on the stationary frame; a latch bar lifting cam on the drawer and lifting the bar off the detent when the drawer is pressed inwardly, the cam tipping to conceal the detent and guide the bar over the detent as the drawer is released and urged outwardly under spring pressure, the drawer having an upwardly tilting cassette pocket tipped upward by the outward spring pressed thrust of the drawer.

3,836,223

CABINET DRAWER SUSPENSION SYSTEM

James C. Signore, Ellicottville, N.Y., assignor to AVM Corporation, Jamestown, N.Y.

Filed Oct. 18, 1972, Ser. No. 298,798
Int. Cl. A47b 88/00, 95/00
U.S. Cl. 312—350 4 Claims

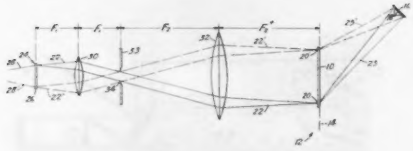


A drawer suspension system including a pair of roller mounting hinged leaves and a pair of drawer mounted rollers, which cooperate with a cabinet mounted trackway and guide tracks to provide cantilever support for the drawer in open position.

3,836,224
HOLOGRAM MEMORY READOUT SYSTEM

Wolfgang H. Strehlow, Twp. of Woodbury; Pui Kum Lee, White Bear Lake, and James H. Packard, St. Paul, all of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Nov. 3, 1972, Ser. No. 303,326
Int. Cl. G02b 27/00
U.S. Cl. 350—3.5 5 Claims

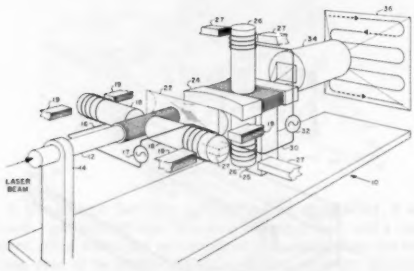


A two-dimensionally scannable electron beam laser is used to address a planar hologram array memory, having a plurality of holograms in a two-dimensional array, from each of which holograms a given order diffracted primary or conjugate image is produced at a common location when any said hologram in the array is addressed by a laser beam at an angle normal to the memory plane. A detector is positioned at the common location for receiving the image produced from each of the holograms in the array.

3,836,225
FIBER OPTIC SCANNERS

Hans J. Wilde, Niantic, and Verne R. Viele, North Stonington, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 24, 1973, Ser. No. 399,875
Int. Cl. G02b 17/00
U.S. Cl. 350—6 7 Claims

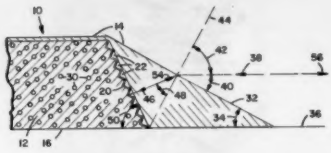


A rod bundle of fiber optic elements transmitting a laser beam are secured at a first location on the rod bundle and driven at a second location on the rod bundle to form a linear scan of the beam. The beam is then collimated and applied to a narrow rectangular bundle of fiber optic elements that are driven orthogonally to the linear scan of the beam to form a scan over a plane surface. The narrow rectangular bundle of fiber optic elements are driven at a lower frequency than the rod bundle of fiber optic elements. All fiber optic elements are driven by electromagnetic or piezoelectric components.

3,836,226
REFLECTIVE PAVEMENT MARKER

James A. Cechetini, 1749 Orion Way, Sacramento, Calif. 95825

Filed July 23, 1973, Ser. No. 381,462
Int. Cl. G02b 5/12
U.S. Cl. 350—103 8 Claims

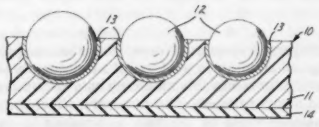


An improved pavement marker adapted to retroflect the headlight beams of oncoming vehicles is disclosed. The marker includes a trapezoidal support block of reflective glass spheres in a cement binder, the bottom surface of which attaches to the pavement. The support block has oppositely directed side faces acutely inclined to the pavement, and a reflective grid overlies each side face. The grid comprises a plurality of retrodirective elements formed in a sheet of reflective material. Each retrodirective element comprises a multifaceted diamond shaped figure having pairs of opposing facets all meeting at a common vertex. The facets of each pair diverge outwardly from the vertex forming half-angles of substantially 45° so that the light impinging on the element is retroflected parallel to direction of impingement with a minimum number of internal reflections. A layer of light-refractive translucent material covers the exposed surfaces of the support block including the side faces, and provides a refractive surface which directs light from headlights of approaching vehicles at the reflective grid generally parallel to the central axes of the elements. The light is thus retroflected back at the approaching vehicles through the refractive surface. If the grid becomes partially eroded due to the traffic abrasion the underlying reflective block retains partial reflectivity.

3,836,227
HEAT-BONDABLE RETROREFLECTIVE SHEETING

Reynold E. Holmen, White Bear Lake, and Jack E. Cook, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 13, 1973, Ser. No. 350,709
Int. Cl. G02b 5/12
U.S. Cl. 350—105 15 Claims



Retroreflective sheeting comprising a monolayer of spherical lens elements supported by a layer of binder material that comprises a thermoplastic heat-activatable adhesive copolymer that comprises ethylene, vinyl chloride, and acrylamide.

3,836,228

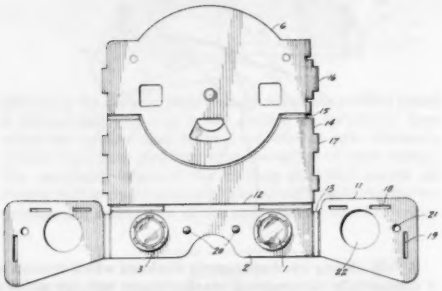
FOLDING VIEWER

Alan Glueck Lewis, West Linn, Oreg., assignor to Gaf Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 302,888, Nov. 1, 1972. This application June 29, 1973, Ser. No. 374,930

Int. Cl. G02b 27/22

U.S. Cl. 350—140 4 Claims



A unitarily constructed folding viewer suitable for use with circular viewing discs. The structure includes a pair of major body portions joined together, having a clearance therebetween. A foldable top member, as well as side and end flaps are hinged to one another and to one of the body portions. Cooperative tabs extending from the body portion and top member are mated with slots in the side and end flaps to form the assembled viewer. The end flaps are provided with openings and when folded down are affixed to the top member by a locking means and seat around the lenses.

3,836,229

ELECTRO-OPTICAL DISPLAY DEVICE

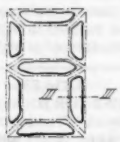
Eric Saurer, Hauterive, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland

Filed Jan. 8, 1973, Ser. No. 321,706

Claims priority, application Switzerland, Jan. 12, 1972, 422/72

Int. Cl. G08b 5/36

U.S. Cl. 350—160 5 Claims



An electro-optical display device for a timepiece in which the device is provided with a shield of electrically insulating transparent material. The shield is applied to a conductive substratum having a design thereon such that the shield covers the marginal portions of the design so as to prevent an excessive density of current on the edges of an electrochromic layer overlying the substratum to prevent erosion of the edges.

3,836,230

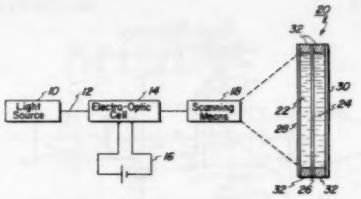
LIQUID CRYSTAL DISPLAY SYSTEM

James E. Adams, Ontario; James H. Becker, Penfield, and Werner E. L. Haas, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed June 27, 1973, Ser. No. 374,199

Int. Cl. G02f 1/16

U.S. Cl. 350—160 LC 33 Claims



A liquid crystal color display system which utilizes a plurality of films or layers of optically negative liquid crystalline materials as passive light discriminating screens is disclosed. The display system may be operated in a two color mode or a three color mode and has the capability of producing various color hues. The system lends itself to operation at very high frequency.

3,836,231

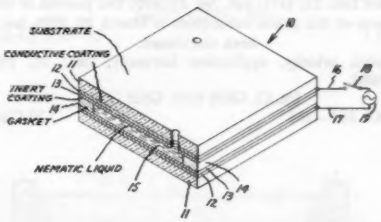
UNIFORM LIQUID CRYSTAL CELLS AND METHOD FOR MAKING THE SAME

Herbert S. Cole, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 185,209, Sept. 30, 1971, abandoned. This application Aug. 6, 1973, Ser. No. 385,830

Int. Cl. G02f 3/00

U.S. Cl. 350—160 LC 10 Claims



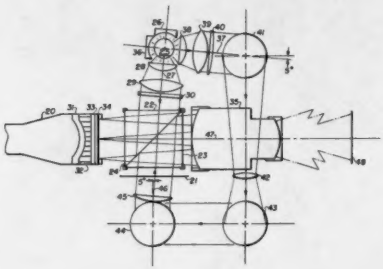
Liquid crystal displays with uniformly clear appearance and long lifetimes are described as comprising thin inert coatings applied to the surface of substrates which may include conductive layers thereon. The inert coatings advantageously are insoluble in the nematic liquid, adhere to the conductive layer and substrate and are substantially transparent. Suitable materials for the inert coating include vinyl acetate resins, ethylene-based resins, epoxies, anaerobic adhesives, polyimides and linear saturated polyesters, for example.

3,836,232

MULTIPLE CHANNEL OPTICAL SYSTEM

Joseph F. Hall, Jr., Santa Ana, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 2, 1973, Ser. No. 329,241
Int. Cl. G02b 27/14
U.S. Cl. 350—174 6 Claims



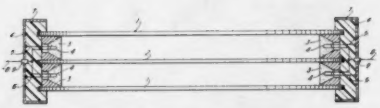
First and second prisms of material substantially transparent to light transmission are positioned in a common diagonally disposed planar interface, preferably comprising an extremely small air space, to form a composite cubic optic element. Visual information from a first channel is directed to the cubic optical element at an angle such that it passes directly through the cubic optical element, including its diagonally disposed planar interface, without reflection. Visual information from a second channel is directed to an adjacent face of the cubic optical element at such an angle relative to the diagonally disposed planar interface as to cause its total internal reflection and consequent redirection along the same axis as the visual information from the first channel, thereby combining the visual information from both channels without undue loss of light energy.

3,836,233

ANTI-FLASH SHUTTER WITH TWO COMPARTMENTS

Frank Frungel, Herwigredder 105a, 2 Hamburg 56, and Horst Lohse, Hamburg, both of Germany, assignors to said Frungel, by said Lohse

Filed Dec. 23, 1971, Ser. No. 211,495. The portion of the term of this patent subsequent to March 20, 1990, has been disclaimed.
Claims priority, application Germany, Dec. 24, 1970, 2063888
Int. Cl. G03b 9/08; G02f 1/28
U.S. Cl. 350—266 20 Claims



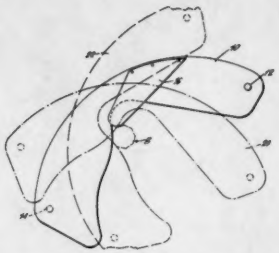
In a frame of the shutter an opening is provided for the passage of light, and at least three transparent plates extend across the opening to define with one another two compartments which the light must pass successively. Explosive charges are provided for opaquing both compartments simultaneously to thereby terminate the passage of light through the opening.

3,836,234

FULLY CLOSING IRIS DIAPHRAGM

John Leonard Farnsworth, Leicester, England, assignor to The Rank Organisation Limited, London, England

Filed Mar. 12, 1973, Ser. No. 340,117
Claims priority, application Great Britain, May 17, 1972, 23096/72
Int. Cl. G02f 1/30; G03b 9/02
U.S. Cl. 350—266 5 Claims



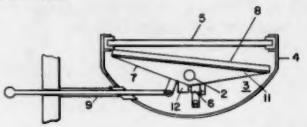
A fully-closing iris diaphragm is disclosed which consists of a substantially conventional iris diaphragm with the addition of a capping section to one leaf, which is positioned to obscure the minimum aperture obtainable without "scissoring" distortion of the leaves.

3,836,235

WIDE REAR VIEW DAY AND NIGHT OUTSIDE MIRROR

Carl D. Russell, Tulsa, Okla., assignor to Robert I. Studebaker and Martha Jean Studebaker, part interest to each

Filed Sept. 20, 1973, Ser. No. 399,450
Int. Cl. B60r 1/06
U.S. Cl. 350—280 3 Claims



A case supports a glass in spaced apart position from a mirrored surface allowing first or second images to be reflected and held by the positioning of the mirrored surface in relation to the glass. The first image is a bright unrestricted image for day viewing; the second: an image that is soft and restricted, ideal for night viewing of bright lights at close range. The fact that the glass and mirrored surface are spaced apart allows for a wide viewing. Actuator or actuators may be extended to either or both the glass or the mirror to allow angling by remote control. The case is preferably closed and centrally supported by a vehicle support to withstand the high air currents and vibration encountered at high speeds.

3,836,236

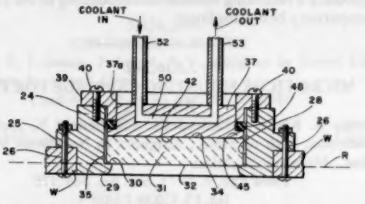
MIRROR MOUNT FOR HIGH POWER LASERS

Russell F. Kirk, Sunnyvale; Frederick E. Moreno, and Jack D. Foster, both of Los Altos, all of Calif., assignors to GTE Sylvania Incorporated, Mountain View, Calif.

Filed Nov. 24, 1972, Ser. No. 308,988
Int. Cl. G02b 5/08
U.S. Cl. 350—310 7 Claims

A mirror mount for a high power laser includes a liquid-cooled backing plate resiliently pressed against the fluid-covered back side of a mirror seated in the recess of a mounting ring. The mating surfaces of the backing plate and mirror are lapped or otherwise precisley formed with flat plane shapes and the thin fluid film between them improves thermal

conductivity at the junction and prevents shear stress between mirror and plate. The backing plate is resiliently pressed against the mirror by a clamping ring through an O-ring. The



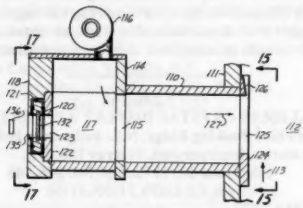
portion of the backing plate through which the coolant passes is immediately adjacent to the portion of the mirror from which the incident laser beam is reflected so as to efficiently remove heat generated by mirror absorption of beam energy. The peripheral edges of the backing plate and mirror are loosely held in the mounting ring to accommodate thermal expansion and contraction of the parts without stress or distortion.

3,836,237

WINDOW ASSEMBLY FOR USE WITH A STACK MONITOR

Dale W. Egan, Montrose; Geoffrey B. Holstrom, Los Angeles; Harry C. Lord, Pasadena; Robert W. Stevens, San Dimas; Darrell P. Port, La Crescenta, and Rollen D. Howard, La Canada, all of Calif., assignors to Environmental Data Corporation, Monrovia, Calif.

Division of Ser. No. 158,885, July 1, 1974, abandoned. This application Apr. 25, 1973, Ser. No. 354,160
Int. Cl. G02b *27/00*
U.S. Cl. 350—319 **3 Claims**



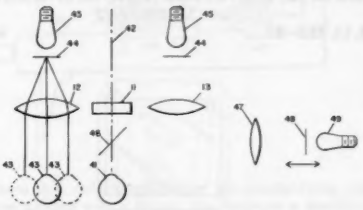
The present disclosure relates to spectrometry. A method is disclosed for detecting nitric oxide (NO) without first converting it to nitrogen dioxide (NO_2) by determining the intensity of a spectral signature in the range between about 2259 and 2269 Angstroms. Apparatus is provided which, in one form, utilizes an output shutter arrangement having a plurality of reciprocating vanes operated at mutually exclusive frequencies for passing regions of absorption radiation and continuum radiation. Circuit means is provided for distinguishing the signals derived at the various frequencies to determine the relative amount of particular material in a sample. In another form of the invention, an output chopper is provided having at least three slit apertures, the center aperture being adapted to pass only radiation at an absorption wavelength and the two outer apertures being adapted to pass radiation in the continuum. A vane is adapted to reciprocate between a first position wherein the chopper passes only radiation through the center aperture and a second position wherein the chopper passes only radiation through the two outer apertures. The area of each of the two outer apertures is preferably one-half the area of the center aperture. A detector viewing radiation passed by the chopper will average the radiation received from the two outer apertures. In yet another aspect of the invention, a window assembly is provided so that the spectrometer may be used as a stack monitor, the window assembly having a slidable window which may be removed for cleaning purposes.

3,836,238

VIEWABLE TARGET SYSTEM FOR EYE EXAMINING INSTRUMENT

Charles R. Munnerlyn, and William H. Trow, both of Fairport, N.Y., assignors to Tropel, Inc., Fairport, N.Y.

Filed May 9, 1973, Ser. No. 358,824
Int. Cl. A61b *3/02*
U.S. Cl. 351—36 **30 Claims**



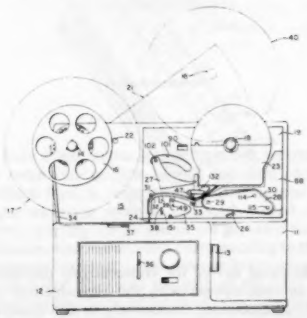
To induce the eyes to deaccommodate during examination by an instrument having an optical system aligned with one eye, a target viewable through an eyepiece is presented to and aligned with the other eye. The target is adjusted until clearly visible and then moved straight away from the other eye to appear to recede to induce both eyes to deaccommodate. A pair of eyepieces are arranged on each side of the optical system to register with the eye not being examined, and a horizontally movable slide carrying a slidable target is operated by knobs for aligning the slide with the eye and moving the target along the slide. Alternatively, a binocular system can be used with a slightly blurred target presented to the eye not being examined, and a visibly lighted, sharp image target presented to the eye being examined and arranged to be blurred to induce de-accommodation of the examined eye.

3,836,239

CINEMATOGRAPHIC PROJECTORS OR THE LIKE AND CARTRIDGES FOR USE THEREWITH

John J. Bundschuh, and Robert J. Roman, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 24,657, April 1, 1970, Pat. No. 3,750,976, which is a division of Ser. No. 685,616, Nov. 24, 1967, Pat. No. 3,552,683. This application Apr. 25, 1973, Ser. No. 354,424
Int. Cl. G03b *23/02*
U.S. Cl. 352—73 **5 Claims**



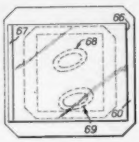
A machine such as a cinematographic projector is convertible to accommodate either a film supply cartridge or an unen-

closed film supply reel, such conversion being automatically accompanied by corresponding changes in the mode of operation of the machine.

3,836,240
MOIRE FRINGE OPTICAL DISPLAY & PROJECTION EQUIPMENT

David Alexander Whyte Henderson, and Brian Thomas Crawford, both of Cheltenham, England, assignors to Pennant Display & Engineering Limited, Cheltenham, England

Filed Nov. 20, 1972, Ser. No. 307,943
Claims priority, application Great Britain, June 7, 1972, 26452/72; July 7, 1972, 31862/72; July 18, 1972, 33513/72
Int. Cl. G03b *21/32*
U.S. Cl. 352—87 **4 Claims**

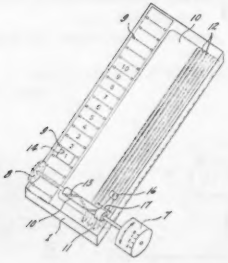


Optical display or projection equipment, using Moire fringes to create moving or animated effects. A transparent sheet carrying special diagrams is superimposed over a moving transparent belt, having a graticule of close parallel lines. The sheet and belt are formed of flexible plastics material. The sheet diagram may be constructed by cutting out sections from a "kit" of pre-printed sheets, and a plurality of sheets may be pivotally attached to a cardboard frame, to build up a complete diagram in successive stages. The apparatus may also include a projector with winding means to convey the belt either from one roller to another roller, across the optical axis, or in a continuous closed loop.

3,836,241
AUDIO-VISUAL DEVICE

Marcel Jules Helene Staar, Brussels, Belgium, assignor to Staar Development Company, Brussels, Belgium

Filed Apr. 21, 1972, Ser. No. 246,403
Claims priority, application Belgium, Apr. 23, 1971, 766203; Nov. 16, 1971, 775363
Int. Cl. G03b *31/06*
U.S. Cl. 353—19 **13 Claims**

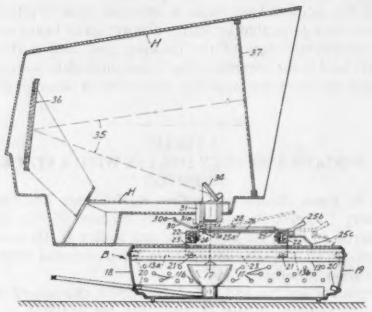


An audio-visual device for consecutively displaying tranparencies in synchronism with the reproduction of sound recordings corresponding, respectively, to said transparencies, said transparencies being in the form of multiple transparencies carried by a holder and said sound recordings being recorded in multiple recording tracks on an independent, movable recording medium. Also disclosed is a mechanism for shitfing a playback head interconnected with means for moving the transparency holder, so that as the holder is moved to bring each transparency into display position the playback head simultaneously is moved over a recording track to reproduce a recording thereon corresponding to the particular transparency being displayed.

3,836,242
MICRO FICHE MOUNTING CARRIAGE FOR FILM READER

Dennis A. Kluver, Minneapolis, and Donald N. Mehl, Minnetonka, both of Minn., assignors to Northwest Microfilm Inc., Minneapolis, Minn.

Filed Apr. 9, 1973, Ser. No. 349,070
Int. Cl. G03b *23/08*
U.S. Cl. 353—27 **7 Claims**

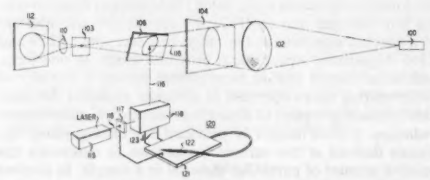


This is a micro fiche film mounting carriage for a film reader and constitutes a base member having a roller track integrally extruded therewith to permit a mounting carriage to be moved on one axis with a second roller track mounted thereon for movement on an axis disposed at right angles thereto.

3,836,243
LIQUID CRYSTAL DISPLAY APPARATUS

Hans Melchior, Basking Ridge, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

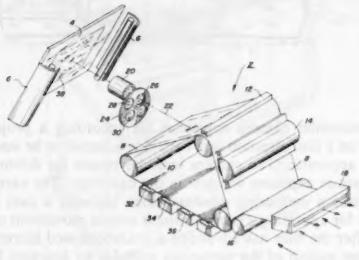
Filed June 27, 1972, Ser. No. 266,586
Int. Cl. G03b *21/00, 21/60*
U.S. Cl. 353—122 **18 Claims**



A system in accordance with the present invention utilizes a thermally addressed liquid crystal display cell as an imaging device in, for example, a schlieren optics projection arrangement. In preferred embodiment, the display cell includes a layer of liquid crystal substance, sandwiched between a first optically transparent heat-producing electrode, a second electrode, and transparent support substrates. The electrodes and the liquid crystal layer are supported by and contained between the support substrates. A controlled laser beam selectively generates hot spots in the heat-producing electrode which, in turn, locally heat the liquid crystal substance above

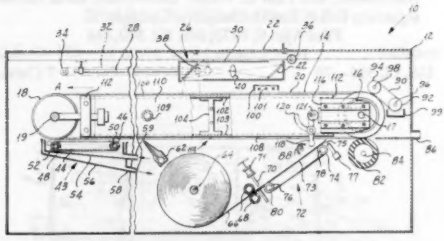
its transition temperature. When the liquid crystal substance is subsequently cooled to its mesophase, long-lasting light-scattering centers remain. These long-lasting light-scattering centers are erased by applying a relatively high-frequency a-c voltage to the electrodes.

3,836,244
COLOR XEROGRAPHY
Richard F. Lehman, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Aug. 29, 1973, Ser. No. 392,580
Int. Cl. G03g *13/22*
U.S. Cl. 355—4 **4 Claims**



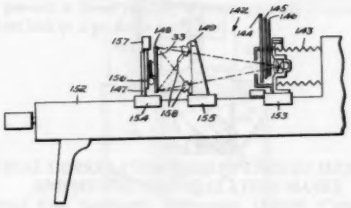
A xerographic process in which an object is sequentially exposed through red, green, and blue filters and the resulting electrostatic images developed respectively with cyan, magenta, and yellow toners. Undesirable toner absorbances in other than their complementary colors are compensated for by selective removal or back transfer of toner from paper.

3,836,245
COPY MACHINE HAVING PHOTOCONDUCTIVE BELT
Peter J. Hastwell; Ian E. Smith, and Dennis I. Scroggs, all of North Adelaide, Australia, assignors to Savin Business Machines Corporation, Valhalla, N.Y.
Filed Nov. 29, 1972, Ser. No. 310,667
Int. Cl. G03g *15/22*
U.S. Cl. 355—8 **10 Claims**



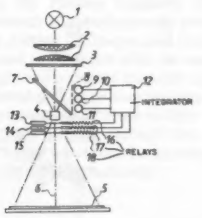
An electrostatic copying machine for producing multiple copies of an original wherein several latent electrostatic images are formed on contiguous segments of a photoconductive surface on a moving belt supported by an air bearing. The belt is stopped for the exposing and developing (and, in one embodiment, image transfer) steps, and the scanning unit moves in opposite directions in successive copying cycles. Machine operation is controlled alternately by microswitches actuated by projections on the belt and by scanner-actuated microswitches. Three kinds of image transfer devices using pressure alone are disclosed, including one for which the belt is stopped during the transfer step.

3,836,246
IMAGE STANDARDIZER APPARATUS
John Kent Bowker, Marblehead, Mass., assignor to Itek Corporation, Lexington, Mass.
Division of Ser. No. 181,141, Sept. 3, 1971, Pat. No. 3,778,541. This application May 2, 1973, Ser. No. 356,672
Int. Cl. G03b *27/76*
U.S. Cl. 355—32 **6 Claims**



Disclosed is a color standardizer for standardizing input specimens utilized with a system that analyzes a plurality of input images. The standarizer receives a multi-colored input sample and a comparator analyzes preselected properties of the input sample with respect to a preselected standard. Corrective filters are utilized to alter the color balance and tone of the input sample so as to be compatible with the system. A camera records the suitably altered image. Furthermore, cropping and focusing apparatus are included so that the image output of the standardizer is of a uniform size.

3,836,247
PHOTOGRAPHIC COLOR PRINTING APPARATUS WITH IMPROVED LIGHT TERMINATING MECHANISM
Volker Weinert, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Sept. 14, 1973, Ser. No. 397,244
Claims priority, application Germany, Sept. 16, 1972, 2245574
Int. Cl. G03b *27/76*
U.S. Cl. 355—36 **7 Claims**



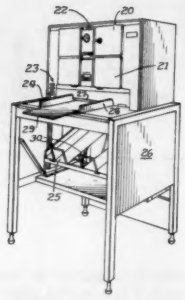
Light from a light source furnishing a first, second and third primary color folds on first, second and third photoreceiver means which furnish, respectively, a first, second and third stop signal when the received light has reached a predetermined total quantity. Logic means are provided for terminating the illumination in the colors corresponding to the first and second so-received stop signals directly by inserting the complementary color filter into the path of the light. The logic means prevent operation of the third complementary filter in response to the third received stop signal and, instead, directly operate the shutter terminating the illumination in all three colors.

3,836,248

OPTICAL DOCUMENT SENSOR FOR READING MACHINES

Robert Sawyer John, Jr., Deerfield, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed May 18, 1973, Ser. No. 361,732
Int. Cl. G03b *27/74, 27/48;* **H01j** *39/12*
U.S. Cl. 355—50 **11 Claims**



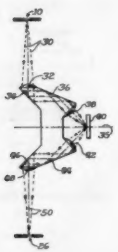
An optical sensor head has a plurality of photocell sensors connected in a bridge circuit. The sensor in one arm of the bridge reads light transmitted directly from a source. At least one sensor in another arm of the bridge reads light transmitted from a source through a document reading area. If a document is present, it affects the light being transmitted to the photocell sensors sufficiently to unbalance the bridge. As a result, the potential differences across the bridge circuit are able to reliably detect the most translucent paper likely to be encountered in the described reading process.

3,836,249

OPTICAL IMAGING SYSTEM OF SHORT FOCAL LENS

Paul E. Weber, Libertyville, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Sept. 13, 1972, Ser. No. 263,388
Int. Cl. G03b *27/48*
U.S. Cl. 355—51 **9 Claims**



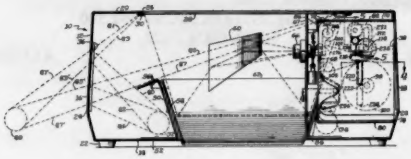
An apparatus for forming a continuous image from an object at generally 1:1 magnification with a lens strip optical imaging system having a series of individual optical imaging devices or combinations extending along the length of the strip. The lens strip comprises a solid elongated molded body of transparent plastic material, or the like, with lenslet surfaces and reflecting surfaces of each optical imaging device or combination formed directly on the solid molded elongated strip.

3,836,250

MICROFILM CAMERA APPARATUS

George W. Bookless, Franklin Park; Heinz E. Hertel, Mount Prospect, and Robert L. Kearney, Northbrook, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Apr. 9, 1973, Ser. No. 349,365
Int. Cl. G03b *1/12, 19/04, 27/46*
U.S. Cl. 355—65 **44 Claims**



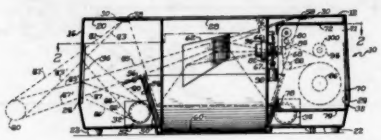
A microfilm camera apparatus for recording a projected image on a film disposed in a cartridge adapted to be inserted in the apparatus. The camera includes means for driving the film past an exposure window in the cartridge. The cartridge comprises a measuring capstan which includes a cam drive means for operating a control which arrests movement of the film after the film has advanced a predetermined increment. The lens system of the apparatus includes an aperture block adapted for insertion through a window in the cartridge for holding the film firmly against an exposure station during exposure. A switch trip mechanism responsive to the end of the reel of film in the cartridge generates a signal which alerts the operator that a new film cartridge should be inserted. In addition, the apparatus includes a novel over-center cartridge latch device for holding the film cartridge firmly in place in the apparatus until manually released. Also, a novel arrangement of spring-biased drive gears are provided in the housing to engage a mating gear attached to a film advance mechanism in the cartridge.

3,836,251

ILLUMINATION SYSTEM FOR FILM RECORDING APPARATUS

Heinz E. Hertel, Mount Prospect; Robert L. Kearney, Northbrook, and Paul E. Weber, Libertyville, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Apr. 9, 1973, Ser. No. 349,494
Int. Cl. G03b *27/54, 27/70*
U.S. Cl. 355—70 **7 Claims**

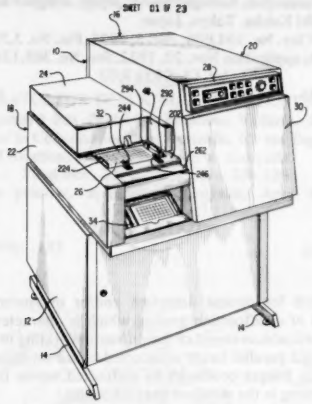


A microfilm apparatus including an illumination system having a long light path between a source of light and a document retaining exposure platen in a relatively compact structure. Only reflected, or indirect, light illuminates the exposure platen; all stray and direct light is absorbed by the unique baffle and light absorbing structure in the apparatus. To achieve compactness, the novel light path construction enables the distance between two light sources to be less than the width of the exposure platen.

3,836,252
MICROFICHE DUPLICATOR

Albert Francis Touchette, Shutesbury, and Nils L. Hakanson, West Springfield, both of Mass., assignors to Scott Paper Company, Delaware County, Pa.

Filed Mar. 8, 1973, Ser. No. 339,284
Int. Cl. G03b 27/30
U.S. Cl. 355—100 **25 Claims**

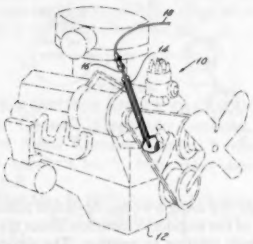


A microfiche duplicator adapted to make single or multiple copies of an original microfiche sheet using roll or sheet supply diazo or vesicular films, with the former developed by the use of either an aqueous or anhydrous developing agent, and providing automatic registration, handling and separation of original and copy sheets in which the original microfiche as well as copies thereof are conveniently returned to the front of the apparatus.

3,836,253
INTERNAL COMBUSTION ENGINE COOLANT SYSTEM LEAK DETECTION METHOD

Alex D. Colvin, Oak Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 28, 1973, Ser. No. 336,593
Int. Cl. G01n 21/26, 21/48
U.S. Cl. 356—70 **8 Claims**

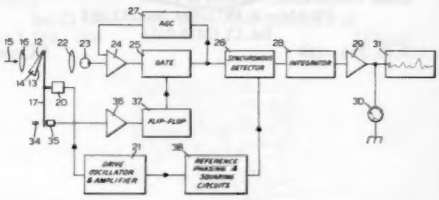


This invention involves an apparatus and method for measuring the light reflecting capability of the lubricant in the lubricating system of the internal combustion engine as a measure of the integrity of the coolant system of the engine. The method involves operating the engine with a substantially water-free lubricant such as oil for a period of time sufficient to permit contamination of the oil in the event a coolant system leak exists and thereafter measuring the light reflective ability of the oil with increased light reflective capability being indicative of a coolant system leak. By situating a light source and a light sensing means axially displaced one from the other on a slender probe, the probe may be inserted into the oil dip stick passage of the engine to a depth sufficient to submerge the light source and the light sensing means and rotation of the probe about its longitudinal axis will eliminate light reflection from internal engine structure from giving false reading. Suitable filtering of the light source will also reduce reflection induced reading. A suitable calibrated electrical readout system may provide a direct reading of the magnitude of a suspected coolant leak or a go-no go indication.

3,836,254
OPTICAL CORRELATOR WITH OPTIMIZED MAXIMUM AND MINIMUM CORRELATION MASKS

Anthony Rene Barringer, Willowdale, Ontario, Canada, assignor to Barringer Research Limited, Ontario, Canada

Filed Dec. 15, 1969, Ser. No. 885,387
Int. Cl. G01j 3/00, 3/42; G01b 9/02
U.S. Cl. 356—74 **6 Claims**



An optical correlator having an optical wedge or other device for producing a spatially dispersed pattern of light in a plane, the light being characterized by zones of relatively high intensity and low intensity corresponding to spectra present in the incident light or the Fourier transform thereof. The dispersed light is alternately or simultaneously passed through a first mask having a pattern of opaque and transparent regions or lines positioned to correlate with the zones of relatively high intensity light and a second mask having a plurality of opaque and transparent regions or lines positioned to correlate with the relatively low intensity zones of light. A photodetector examines the light passing through the masks and produces and output signal which can be analyzed to determine the character of the incident radiation.

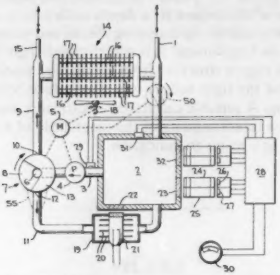
3,836,255
SPECTROMETRIC SUBSTANCE ANALYZER EMPLOYING TEMPERATURE MODULATION

Mark Schuman, 101 G. St., S.W. Apt. 516, Washington, D.C. 20024

Continuation-in-part of Ser. No. 241,742, April 6, 1972. This application Dec. 29, 1972, Ser. No. 319,729
Int. Cl. G01j 3/30; G01n 21/34
U.S. Cl. 356—85 **70 Claims**

A spectrometric substance analyzer includes an optical chamber containing fluid that is cyclically temperature modu-

lated at substantially constant pressure. The fluid is supplied via recirculating circuits to the chamber from hot and cold



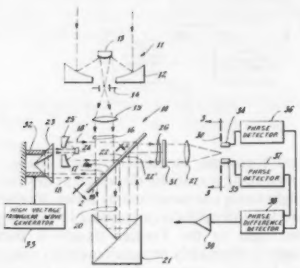
sources that are cyclically connected to the chamber so that at any time only one of the sources is in recirculating fluid flow relationship with the chamber.

3,836,256

INTERFEROMETER FOR TESTING TELESCOPE OPTICS

William N. Peters, Ridgefield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk & Conn.

Filed May 8, 1972, Ser. No. 251,305
Int. Cl. G01b 9/02
U.S. Cl. 356—109 **9 Claims**



This is an interferometer of Twyman-Green type adapted for testing the optics of a stellar telescope. Coherent light from a source, such as a star, through the telescope is collimated and divided into a reference beam, and a main beam, which are, respectively, a fractional cross-sectional area of the collimated beam, and the remaining cross-sectional area thereof. The reference beam is expanded to be the same diameter as the main beam by an afocal telescope and the two are then combined in superimposed relation. The optical path lengths of the reference and main beams are made approximately the same and means is provided for cyclically lengthening and shortening the length of one of them at a predetermined rate so that one of the paths is cyclically shorter than, equal to and longer than the other. The combined beams are filtered and focussed to image the telescope pupil (usually the primary mirror) in a plane, and at least a pair of photodetectors in this plane detect the light respectively at different points on the image, and produce signals proportional to the light received. The signals from the respective photodetectors are compared as to phase when the signal is sinusoidal, or time delay when the signal is a pulse, to detect the deviation of the wavefront exiting the telescope from the ideal wavefront, such deviation being linearly proportional to aberrations of the telescope resulting from poor optical figure on the individual optical elements or misalignment of the telescope optics.

3,836,257

METHOD FOR OPTICAL DETECTION AND/OR MEASUREMENT OF MOVEMENT OF DIFFRACTION GRATING

Kazuya Matsumoto, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 104,006, Jan. 5, 1971, Pat. No. 3,726,595.
This application Nov. 20, 1972, Ser. No. 308,124
Int. Cl. G01b 9/02
U.S. Cl. 356—111 **4 Claims**

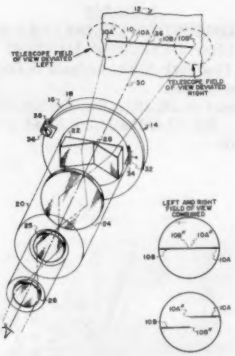
A method for optical detection and/or measurement of movement of a diffraction grating which is characterized in that the vertical movement of the diffraction grating in respect to a standard parallel beam is detected based on variation in interference fringes produced by diffracted waves from the grating moving in the standard parallel beams.

3,836,258

ANGULAR ORIENTATION MEASURING APPARATUS

Henry C. Courten, Commack, and Joseph P. Mattal, Smithtown, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, Long Island, N.Y.

Filed Dec. 15, 1972, Ser. No. 315,486
Int. Cl. G01b 11/26
U.S. Cl. 356—138 **7 Claims**



An optical device using a wedge deviation technique for the measurement of the angular orientation about the axis of rotation of one body relative to another. The device employs a passive target, which may be a linear reticle, on one body and optical measuring means on the second body. The measuring means has an optical element such as a prism assembly to split the image of spaced apart portions of the linear target into two transposed halves which are viewed by suitable means such as a telescope. An optical wedge assembly centered in the line of sight on the axis of rotation between the telescope and the target can be used as the optical element. When the target reticle lies in the plane described by the optically deviated split field

of view of the telescope, an unbroken line is perceived through the telescope. When rotation about the line of sight occurs in one body with respect to the other, a linear displacement of one half of the split image of the target with respect to the other occurs. The amount of rotation of the optical measuring means required to bring the split image back into coincidence is correlated against a calibrated scale to give an indication of the amount of angular displacement about the axis of rotation that had occured. In a further embodiment, an arrangement of mirrors rather than a wedge assembly is used to produce the split image in the optical measuring means.

3,836,259

APPARATUS FOR TRACKING A LUMINOUS OBJECT

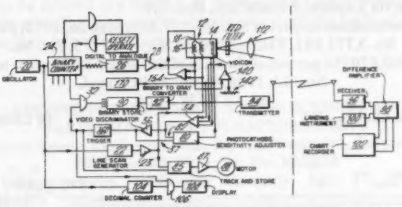
Frank Bernard Roy Partridge, Mentone, Victoria, Australia, assignor to Commonwealth of Australia, C/- the Department of Civil Aviation, Melbourne, Victoria, Australia

Filed Mar. 29, 1972, Ser. No. 239,220

Claims priority, application Australia, Apr. 8, 1971, 4551/71

Int. Cl. G01c *1/00*

U.S. Cl. 356—152 **23 Claims**



Apparatus for tracking a lamp in the nose of an aircraft calibrating an instrument landing system comprising a vidicon tube, a scanning arrangement for causing scanning the vidicon photocathode along parallel lines and including a frame scan generator controlled by a binary counter so that the instantaneous condition of the counter determines the line being scanned, a sighting device aligned with the vidicon so that a reference line of the scan can be aligned in a predetermined orientation relative to an aircraft landing approach path and discriminator means arranged to select from the vidicon output a pulse representing the lamp image which pulse causes read out of the counter to identify a scan line intersecting said image, displacement of the identified scan line from the reference line representing angular deviation of the lamp from said orientation as viewed by the vidicon.

3,836,260

QUICK RESPONSE ANGLE TRANSDUCER

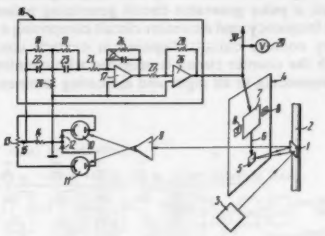
Lev Petrovich Ulyanov, Eropkinsky pereulok, 7, kv. 6, Moscow, and Alexei Kuzmich Karelin, Novomytischensky prospekt, 33, korpus 3, kv. 75, Moskivskoi oblasti, Mytischi, both of U.S.S.R.

Filed May 8, 1973, Ser. No. 358,362

Int. Cl. G01b *11/26*

U.S. Cl. 356—152 **1 Claim**

A quick-response transducer of angles of rotation of various members and devices about their axes comprising a mirror mounted on an axle, a collimated light beam source, a reflecting prism, two differentially connected photocells with a common load, a d.c. voltage amplifier, a galvanometer with mirror which is fixed by means of a holder to the galvanometer's movable frame and is optically associated with the axle-mounted mirror, the galvanometer being arranged in direct proximity to the axle-mounted mirror in order to extend the range of the measured angles of rotation of members and



devices about their axes, wherein the movable frame of the galvanometer is coupled to the output of the d.c. voltage amplifier.

3,836,261

DEVICE FOR DETECTION OF BLEMISHES ON OPPOSITE FACES OF A PLANAR OBJECT

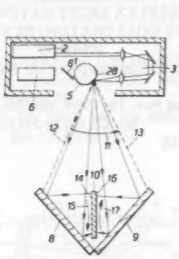
Graham Morley Clarke, Edinburgh, Scotland, assignor to Ferranti Limited, Hollinwood, England

Filed July 18, 1973, Ser. No. 380,216

Claim priority, application Great Britain, July 29, 1972, 35610/72

Int. Cl. G01n *21/16*; **G01b** *11/00*; **G01n** *21/48*

U.S. Cl. 356—200 **7 Claims**



A detector of blemishes in opposite faces of a substantially planar object or web comprises a scanning station past which the object moves, the scanning station including a laser, a lens system to focus the beam onto the surface and a detector to receive light diffusely reflected from the surface and to produce a blemish signal when a change is detected in the amount of light reflected. The scanning station is arranged with respect to the object so that the beam scans in a direction normal to the plane of the object and mirrors are provided, inclined to each face of the object such that the scanning beam strikes each mirror in turn and is reflected therefrom to scan both faces of the object.

3,836,262

INDICATOR CIRCUIT

Kotaro Yata, and Motonobu Matsuda, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed June 29, 1972, Ser. No. 267,615

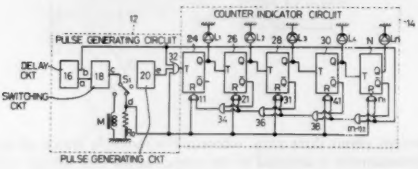
Claims priority, application Japan, July 7, 1971, 46-49608; July 7, 1971, 46-49609

Int. Cl. G01j *1/44*

U.S. Cl. 356—226 **13 Claims**

Apparatus is disclosed for measuring and providing an indication of illumination, comprising a delay circuit including a light-receiving element and a capacitor, for integrating the

quantity of light in accordance with illumination incident on the light-receiving surface of the light-receiving element; a switching circuit actuated by an output signal from the delay circuit; a pulse generator circuit generating pulses of a constant frequency; and a counter circuit comprising a plurality of binary counter circuits disposed in cascade connection, in which the counter circuit is provided with counting elements corresponding to all digits and indicating luminescent diodes



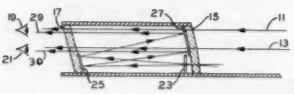
connected to output terminals of the counting elements. The counter circuit initiates the counting of the pulses derived from the pulse generator circuit in accordance with illumination incident on the light-receiving surface of the light-receiving element, and the delaying operation of the delay circuit. The counting circuit counts the number of the pulses in a period of time until the switching circuit is actuated, thereby providing a digital indication of a set analog value.

3,836,263

IMPROVED REFLEX SIGHT HAVING A FREQUENCY SELECTIVE COLLIMATING BEAM COMBINING MIRROR

Glenn E. Rickert, Community State Bank, Huntington, Ind. 46750

Filed Nov. 19, 1969, Ser. No. 878,021
Int. Cl. G02b *23/10*
U.S. Cl. 356—251 **5 Claims**



A gunsight is disclosed which provides a collimated image of a reticle, which reticle is lighted by ambient light. This image and the view of a target are combined by a frequency selective beam combining device such as a dichroic mirror. The frequency selective combination causes the reticle to appear to an observer in a color which contrasts with the target. Collimation and the frequency selective combination are simultaneously achieved using a dichroic concave mirror having either a spherical or a parabolic curvature.

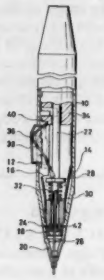
3,836,264

MECHANICAL PENCIL

Akio Saito; Kiyohiko Fukazawa, and Yukitoshi Motoyama, all of Kanagawa, Japan, assignors to Mitsubishi Pencil Co., Ltd., Tokyo, Japan

Filed Feb. 15, 1973, Ser. No. 332,744
Claims priority, application Japan, Feb. 15, 1972, 47-17964; Mar. 22, 1972, 47-33139; May 2, 1972, 47-51145
Int. Cl. B43k *2/16*
U.S. Cl. 401—65 **5 Claims**

In a mechanical pencil an extension of lead is carried out by a resilient means operatively arranged in a side portion of a body casing. The resilient means comprises a push means and a force translating means cooperative with said push means and adapted to translate a radial force manually applied to the



push means into an axial force for urging a lead tube downwardly thereby to extend the lead from a cap nozzle threadedly connected to a tip of the pencil body.

3,836,265

DISPOSABLE MECHANICAL PENCIL ASSEMBLY

Marvin Kapilow, 8 Sound Rd., Rye, N.Y.

Continuation-in-part of Ser. No. 257,357, May 26, 1972, Pat. No. 3,771,882. This application May 14, 1973, Ser. No. 360,070The portion of the term of this patent subsequent to Nov. 13, 1990, has been disclaimed.
Int. Cl. B43k *21/06*
U.S. Cl. 401—80 **16 Claims**

A disposable mechanical pencil includes a tubular barrel having a forward tapered end through which the lead is adapted to project. A tube which receives this lead is disposed interiorly of the barrel and in substantially concentric relation therewith. This tube is generally U-shaped with a forward pinched end for resiliently engaging the lead and preventing it from falling out of the tube. The rear end of the tube includes a laterally projecting arm which engages with inner surfaces of the barrel and cooperates therewith in centering the tube within the barrel. A carrier including a forward end within the tube in engagement with the lead acts to shift the lead forwardly out of the barrel when a laterally projecting handle is manually actuated. The handle is adapted to move through aligned slots in both the barrel and the tube and also serves as an indicator for the amount of lead remaining within the tube. The carrier is provided with a resistance means in the form of a bend, surfaces of which engage the interior of the tube thereby preventing the lead from being pushed back into the tube under normal writing pressure.

3,836,266

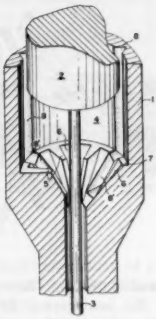
TUBE WRITING PEN

Ewald Lorenz, Uelzen; Wilhelm Schlink, Anderten; Bruno Kunzler, Koldingen, and Klaus-Dieter Goltermann, Hannover-Kleefeld, all of Germany, assignors to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Filed July 20, 1973, Ser. No. 381,316
Claims priority, application Germany, July 21, 1972, 2235880; May 24, 1973, 2326431
Int. Cl. B43k *1/06, 1/10*
U.S. Cl. 401—259 **7 Claims**

Capillary writing pens of the type having a housing defining a reservoir which communicates with a capillary writing tube

extending through the lower end of the housing. The reservoir is characterized by the definition of a plurality of radially spaced capillary grooves extending inwardly from the walls of the reservoir into the writing tube, so as to suspend writing



ink, regardless of inversion of the pen and to enhance flow from the reservoir into the writing tube. The writing grooves may be defined in a frustum at the lower end of the reservoir and, as well, may extend longitudinally along the walls of the reservoir into the frustum.

3,836,267

FITTING FOR RELEASABLY CONNECTING TWO PARTS, ESPECIALLY FURNITURE PARTS

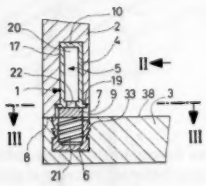
Gerold Schatz, Ostdeutsche Str. 45, 732 Plochingen, Germany

Filed Apr. 23, 1973, Ser. No. 353,626

Claims priority, application Germany, Apr. 27, 1972, 2220675

Int. Cl. F16b *12/10*

U.S. Cl. 403—17 **24 Claims**



A fitting for releasably connecting two parts, especially furniture parts, with each other in which a socket provided with an inner screw thread is fixed in a bore of one part and in which a shaft is turnably but axially immovably mounted in a shell fixed in a bore in the other part axially aligned with the bore in the one part. The shaft has a portion projecting axially beyond the shell and provided with an outer screw thread for threading engagement with an inner screw thread of the socket. An actuating member in form of a lever is fixed to the shaft and projects radially therefrom adjacent the open end of the shell for turning the shaft and the threaded portion projecting therefrom for threadingly engaging the thread on the projecting portion with that of the socket.

3,836,268

SWIVEL ASSEMBLY

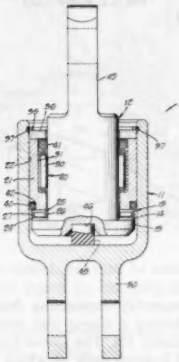
Arnold F. Behnke, Rosemead, Calif., assignor to Kay-Brunner Steel Products, Inc., Los Angeles, Calif.

Filed Mar. 26, 1973, Ser. No. 344,590

Int. Cl. F16c *17/00;* **B25c** *3/18*

U.S. Cl. 403—165 **10 Claims**

A swivel assembly adapted for use under tension and comprising a flanged rotor sealed within a cup-shaped housing along with a combined thrust and radial bearing unit held assembled by self-locking keeper means. The thrust bearing is



maintained preloaded under conditions effective to retain the components locked against disassembly.

3,836,269

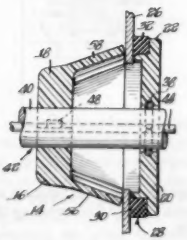
CABLE SEALING GROMMET

Richard Allen Koscik, Schaumburg, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Sept. 26, 1973, Ser. No. 400,961

Int. Cl. F16b *9/02*

U.S. Cl. 403—197 **8 Claims**

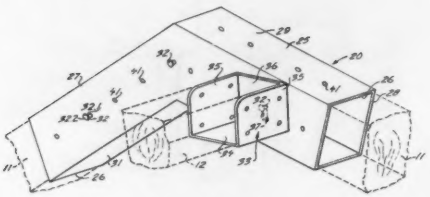


The present invention relates generally to improvements in grommets of the type adapted to accommodate cables and more particularly to grommets adapted to sealingly encircle a cable and designed for assembly after the cable has been mounted in position. The present invention has a very practical application for use with a hood release cable which traverses the fire wall of an automobile. The sealing and strain relief grommet disclosed herein includes a pair of similar hingedly connected plastic sections, each of said sections presenting a peripheral surface conforming substantially with one half of a cone periphery. Sealer sections for engaging one side of a work piece or panel are secured as a unit to complementary flange sections of the plastic half conical sections. Yieldable abutment means associated with the plastic half sections serve to resist axial dislodgment of the grommet after complete insertion thereof within a panel aperture.

3,836,270
FRAMEWORK CONNECTOR

John Frederick Chambers, Suite 209-912 Berkeley Rd., North Vancouver, British Columbia, Canada

Filed Dec. 18, 1972, Ser. No. 316,123
Int. Cl. E04c 1/28
U.S. Cl. 403—218 2 Claims

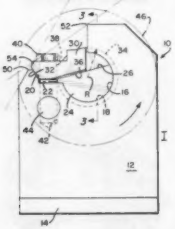


A connector assembly connecting frame members of a frame structure having a sleeve into which an end of one frame member slidably fits. The sleeve has a plurality of longitudinally spaced buttons each of which can releasably engage a chair which receives an end portion of another frame member for connecting both frame members at right angles to each other.

3,836,271
SHAFT MOUNTING MEANS

William D. Coski, Mercer Island, Wash., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Mar. 5, 1973, Ser. No. 338,372
Int. Cl. B25g 3/00; F16b 7/00, 9/00
U.S. Cl. 403—355 9 Claims



The means comprises a pair of spaced-apart walls which have arcuate recesses therein for receiving the flatted ends of an earth cutter shaft.

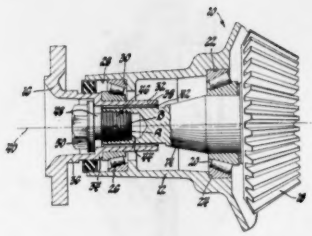
Retainers fit across the flats formed in the ends of the shaft and are secured within the recesses and against camming surfaces of the walls. In response to any unwanted undesirable rotation of the shaft, the retainers rotate relative to an axial center of the shaft to force ends thereof, which abut the camming surfaces more securely into the recesses so that the retainer is jammed or wedged in place. This results in positively inhibiting further rotation of the shaft.

3,836,272
CONNECTING DEVICE WITH EXPANDING SPLINES

Morris J. Duer, Lansing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 2, 1973, Ser. No. 375,918
Int. Cl. F16b 7/00
U.S. Cl. 403—359 1 Claim

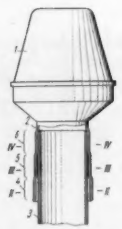
A bearing arrangement for a shaft has duplex bearings preloaded by a companion member drivingly connected to the shaft. Cooperating, straight, relatively slidable splines on the companion member and shaft are urged into an interference fit by a tapered plug threaded into and resiliently expanding the bored, splined end of the shaft. Removal of the plug automatically releases the interference fit thereby facilitating removal of the companion member and disassembly of the bearing arrangement.



3,836,273
DETACHABLE TELESCOPIC JOINT

Anatoly Lvovich Gutman, ulitsa Eniseiskaya, 6, kv. 14; Vladimir Alexandrovich Presman, 2 pereulok Kozlova, 8, kv. 10, both of Minsk; Leonid Mikhailovich Abramov, Chilanzar, kvartal V15, dom 28 "b", kv. 23, and Jury Stepanovich Shokurov, Chilanzar, kvartal V21, dom 7, kv. 59, both of Tashkent, all of U.S.S.R.

Filed Dec. 28, 1973, Ser. No. 429,370
Int. Cl. F16b 7/10
U.S. Cl. 403—377 1 Claim



In the joint, an element made of resilient material has at least three portions gradually converting from one into other, wherein the middle one of them is circular-shaped in its cross-section, while the extreme ones are oval-shaped, and their similar axis are crossing.

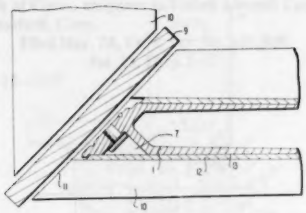
3,836,274
SELF-ALIGNING, MITER JOINT CONNECTING MEANS

Alexander Heuschen, Troisdorf; Hans Schaefer, Cologne; Wolfgang Budich; Robert Krah, both of Troisdorf-Sieglar, and Karl Obermeier, Rheidt/Troisdorf, all of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

Filed Mar. 21, 1972, Ser. No. 236,639
Claims priority, application Germany, Apr. 1, 1971, 2115794
Int. Cl. F16b 7/00
U.S. Cl. 403—401 11 Claims

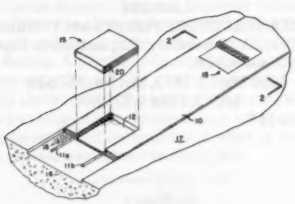
Corner joint made up of miter-cut hollow profile members of plastic with or without an internal metallic reinforcing frame and with connectors introduced at the corners of the

hollow profile member and likewise fitted in a miter-like way, characterized in that the connector is formed, on the miter



surface, with grooves and projections of a minor depth and/or height, respectively, which are associted in a manner offset by 180° in mirror symmetry.

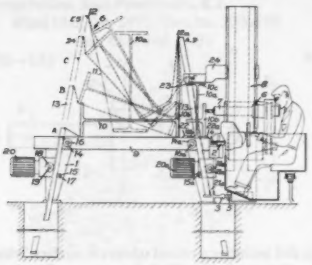
3,836,275
ROADWAY MARKER DEVICE
Dan Milton Finch, 200 Arlington Ave., Kensington, Calif. 94707
Filed Mar. 31, 1972, Ser. No. 240,155
Int. Cl. E01f *9/06*
U.S. Cl. 404—13 **2 Claims**



A roadway marker system for improved wet-night visibility where snow plowing is prevalent in which a preformed strip is provided with recesses into which inserts can be placed, the inserts being provided with reflector elements, electrically activated light emitting devices, electrical heating elements, electrically activated infra-red radiation emitting devices, or radioactive light emitting elements. Electrical conductors are also embedded in the strip to supply power to the inserts.

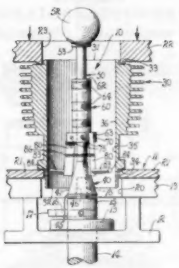
3,836,276
APPARATUS FOR MACHINING WORK-PIECES
Jean Cloup, 33-Latresne, France
Filed Aug. 21, 1972, Ser. No. 282,065
Claims priority, application France, Apr. 18, 1972, 72.13657
Int. Cl. B23b *39/06*
U.S. Cl. 408—67 **13 Claims**

Apparatus for orienting a work-piece, particularly a metal girder and holding it in position ready for machining, particularly drilling, comprises a machining unit displaceable with respect to a fixed bed. At least one deformable member is provided on which the work-piece rests and this member is fixed by its two ends to the tops of two substantially vertical bars. These bars are capable of sliding vertically and independently with respect to the bed and the latter includes a table on which the work-piece rests. The table is arranged in front of the machining unit. The deformable member or members



generally comprise chains, but may be cables either of metal or textiles. Different means for clamping the work-piece are described.

3,836,277
CENTERING TOOL
Daryl G. Brooks, Fresno, Calif., assignor to Porta-Tool, Incorporated, Clovis, Calif.
Filed June 4, 1973, Ser. No. 366,865
Int. Cl. B23b *49/00*
U.S. Cl. 408—75 **7 Claims**

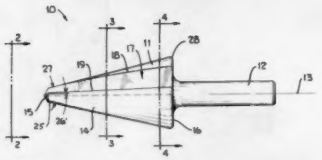


A work object centering tool having a socket mount with a conical exterior surface defining a longitudinal axis, an elongated rod secured on the mount in alignment with the axis, a slide member received on the rod, three arms pivotally secured on the slide member, an extension individually borne by each arm in substantial right angular relation thereto, and springs interconnecting the arms tensionably to retain the arms in contact with the surface of the mount over a predetermined path of movement with the remote ends of the extensions in a plane substantially normal to the axis of the mount and approximately 120° apart in the plane.

3,836,278
TAPERED DRILL BIT
Alexander G. P. McInnes, Indianapolis, Ind., assignor to International Research and Development Corporation, Indianapolis, Ind.
Filed Dec. 14, 1972, Ser. No. 315,077
Int. Cl. B23b *51/00*
U.S. Cl. 408—199 **2 Claims**

A tapered drill bit for cutting round holes of different diameters in a sheet of material. The bit includes a main body integrally attached to a drive shank, said body and shank having an axis of rotation and being rotatable in a direction of

rotation. A slot interrupts the perfectly smooth outer surface of the main body extending from the main body tip rearwardly to an enlarged opposite end. A leading noncutting edge and a trailing cutting edge extend lengthwise along the side of the



slot. The slot includes a round undercut surface which extends from the cutting edge beneath the outer surface in a direction opposite the direction of rotation and then back towards the noncutting edge.

3,836,279

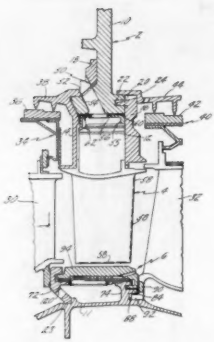
SEAL MEANS FOR BLADE AND SHROUD

Richard E. Lee, West Palm Beach, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Feb. 23, 1973, Ser. No. 335,213

Int. Cl. F01d *5/18, 5/30, 5/08*

U.S. Cl. 415—116 **5 Claims**



A turbine engine construction having a disc assembly with blades mounted therearound and a shroud construction for encompassing the ends of the blades. A sheet metal blade root seal is provided between the root of each blade and its cooperating slot in the disc for sealing cooling passages passing between the disc and blade. Each seal also holds its cooperating blade radially outward in its slot in the disc. A sheet metal shroud seal is provided between flange means on the engine casing and a liner on a rub strip seal member for sealing cooling passages passing through the flange means and liner. Each seal also holds the rub strip member radially inward.

3,836,280

MOLTEN METAL PUMPS

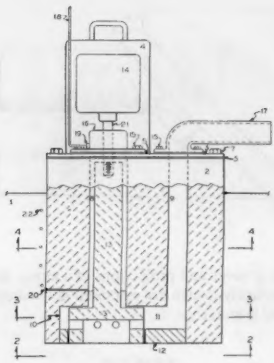
Fenton C. Koch, Chesterland, Ohio, assignor to High Temperature Systems, Inc., Newbury, Ohio

Filed Oct. 17, 1972, Ser. No. 298,415

Int. Cl. F04d *7/00, 7/02, 29/10*

U.S. Cl. 415—175 **1 Claim**

A pump having a pumping chamber, an impeller shaft enclosed in a shaft bore communicating with the chamber, and an impeller carried on a shaft in the chamber is partially immersed in liquid so that the shaft bore extends down to the chamber from a location above the liquid, and the shaft bore is



pressurized with an inert gas to counteract the pressure of the liquid head and the pumping pressure and thereby prevent the liquid from rising in the bore around the shaft.

3,836,281

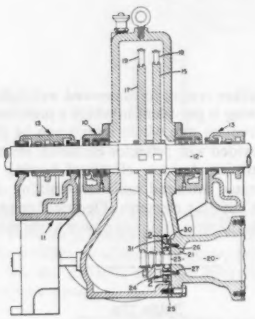
NOZZLE STRUCTURE FOR STEAM TURBINES

Charles C. Czuszak, Greensburg, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 2, 1973, Ser. No. 337,620

Int. Cl. F01d *9/02, 9/04*

U.S. Cl. 415—217 **4 Claims**



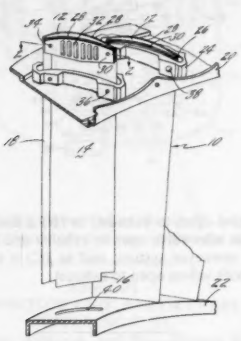
The nozzle structure of this invention includes a pair of nozzle blade supporting plates arranged in overlying relation. The plates are formed with an arcuate opening arranged in registration with a similar shaped passage in the wall of the steam chamber. The plates are formed with a recess in opposite side surfaces of the opening therein. Nozzle blades are positioned in the opening and have end portions extending into the recess. Spacers are also mounted in the recess between the end portions of the blades and are shaped to space the blades apart at the desired angle. The end portions of the blades and the spacers are clamped between plates and the plates are clamped against the wall of the steam chamber.

3,836,282

STATOR VANE SUPPORT AND CONSTRUCTION THEREOF

William Mandelbaum, Bloomfield, and John A. Violette, Granby, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 28, 1973, Ser. No. 345,808
Int. Cl. F01d 5/10
U.S. Cl. 415—217 4 Claims



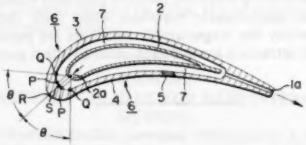
A deformable and expandable metal support formed from a thin sheet metal mounted between the stator or fixed vane and the wall of the complementary recess formed in the engine casing or shroud provides an interference fit for supporting the vane therein. A plurality of spaced elongated stamped-out depressions spaced chordwise relative to the vane and extending into the slot formed in the support structure carry a lead-in ramp and by virtue of press fitting therein said depressions are expanded laterally and deformed and when in the deformed condition provide a stiff zero clearance joint.

3,836,283

CONSTRUCTION OF AXIAL-FLOW TURBINE BLADES

Masakatsu Matsuki, and Toyoaki Yoshida, both of Tokyo, Japan, assignors to The Director of National Aerospace Laboratory of Science and Technology Agency, Masao Yamanouchi, Tokyo, Japan

Filed Dec. 11, 1972, Ser. No. 313,843
Claims priority, application Japan, May 8, 1972, 47-44663
Int. Cl. F01d 5/18
U.S. Cl. 416—96 4 Claims



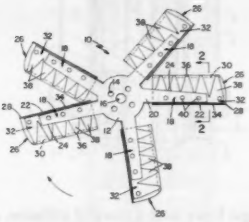
Axial-flow turbine nozzles and moving blades which employ hollow blade means, the blades having a wall thickness distribution on both sides, suction side and pressure side, of the hollow portion which is selected in accordance with the distribution of effective local heat transfer coefficients along the blade surface in the chordwise direction, whereby the temperature distribution in said hollow blades responds almost uniformly to the temperature change of the motive fluid.

3,836,284

CONTROLLED DEFLECTION FLEXIBLE BLADED FAN

Allan W. DeJong, Chatham, Ontario, Canada, assignor to Fram Corporation, East Providence, R.I.

Filed Mar. 10, 1972, Ser. No. 233,479
Int. Cl. F04d 29/38
U.S. Cl. 416—132 9 Claims



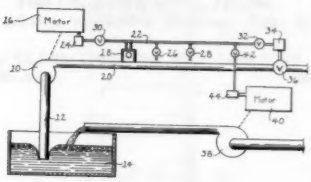
A flexible bladed fan having radially extending blades transversely curved from upstream to downstream and having a support member on the upstream side of each blade, curved in the same direction as said blade, said support member having a larger radius than that of said blade, the leading portions of the blade and support member being tangent, the trailing portion of said support member radially discontinuous and spaced from said blade.

3,836,285

WATER REGULATOR AND POWER GOVERNOR

Rufus J. Purtell, Brownfield, Tex., assignor to Tri-Matic, Inc., Brownfield, Tex.

Filed Dec. 7, 1972, Ser. No. 311,706
Int. Cl. F04b 49/04, 49/00
U.S. Cl. 417—34 12 Claims



Equipment detects the first small amount of air which is pumped from a liquid source and uses it for governing the power or liquid flow. This is accomplished by attaching an air separating relief vent to the discharge pipe of the pump. The vented pressurized air is captured and used to activate air driven cylinders which control the water flow or the power source by decreasing the speed of the pump or by choking the outlet of the pump or by increasing the fluid supply to the pump.

3,836,286

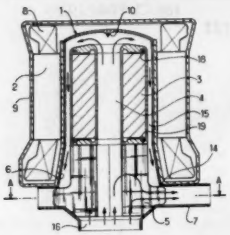
PROCESS FOR PUMPING LIQUID METALS BY A DRIVE EFFECT AND A PUMP IMPLEMENTING THIS PROCESS

Claude Malaval, Antony, France, assignor to Groupement Atomique Alsacienne Atlantique, Le Plessis Robinson, France

Filed Mar. 30, 1973, Ser. No. 346,385
Claims priority, application France, Mar. 30, 1972, 72.11245
Int. Cl. F04f 1/18
U.S. Cl. 417—50 14 Claims

A process for pumping liquid metals and a pump for implementing this process, providing a high flow rate at high pres-

sure. By means of a rotating magnetic field created by applying a tension to the windings of the stator, the liquid metal contained in the bell is driven in rotation and ejected by the effect of centrifugal force onto a circular diffusion device with hollow blades, thus causing the liquid metal to be driven directly into the conduits limited by the blades.



3,836,287

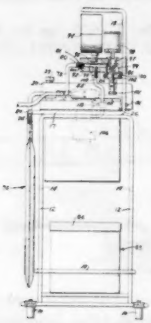
WOUND DRAINAGE EQUIPMENT

James R. Grosholz, Strafford; Charles L. Crowley, Hatboro, both of Pa., and Charles G. Hutter, III, Hollywood, Calif., assignors to Air-Shields, Inc., Hatboro, Pa.

Division of Ser. No. 850,440, Aug. 15, 1969, Pat. No. 3,675,653. This application Apr. 6, 1972, Ser. No. 241,658

Int. Cl. F04b *49/00, 43/08, 45/06*

U.S. Cl. 417—306 **6 Claims**



Pump provides for disposable drainage of body fluids by means of peristaltic action. Separate drainage kit comprises bag for collection of fluids. Tube leading from bag to catheter has a collapsible wall section having sufficient resilience so that periodic collapsing by rotatable pump element creates sufficient negative pressure within the tube to pump fluids to the bag. Slot loading and unloading of the tube is provided.

3,836,288

BLOWER CONTROL ASSEMBLY FOR VACUUM CONVEYOR SYSTEM

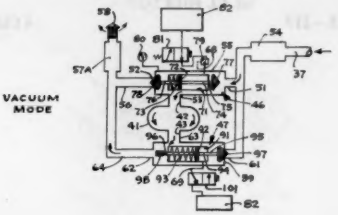
Arthur J. Evans, Northville, Mich., assignor to Whitlock, Inc., Framington, Mass.

Filed May 17, 1973, Ser. No. 361,233

Int. Cl. B65g *51/34, 53/28*

U.S. Cl. 417—307 **12 Claims**

A control assembly for the blower of a vacuum conveyor system, comprising a three-way fluid-pressure-actuated blower inlet valve connecting the blower inlet either to the conveyor system or to exhaust, a similar blower outlet valve connecting the blower outlet either to the conveyor system or to exhaust, and actuating means for actuating the valves, in coordination, to (A) a conveyor vacuum mode of operation with the blower inlet valve open to the conveyor system and the outlet valve open to exhaust, to (B) a conveyor pressure mode with the inlet valve open to exhaust and the outlet valve open to the conveyor system, and to (C) a conveyor idling mode, with both valves open to exhaust.



3,836,289

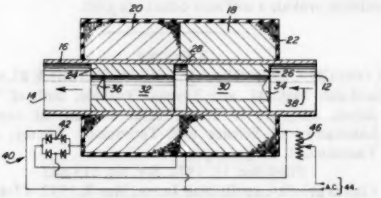
MAGNETIC PUMP

Earl W. Wolford, 2285 Forest St., Boulder, Colo. 80302, and Orville P. Frazee, 2744 Teller St., Lakewood, Colo. 80215

Filed Sept. 6, 1972, Ser. No. 286,726

Int. Cl. F04b *17/00*

U.S. Cl. 417—415 **14 Claims**



A pump device comprising at least two magnetizable members defining in part a fluid chamber disposed therebetween, means for generating magnetic fields of generally uniform flux through said magnetizable members along their respective lengths, whereby the magnetizable members are periodically polarized for attraction toward each other to effect pumping.

3,836,290

MOTOR COMPRESSOR UNIT

Thomas Carter, Baldwinsville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

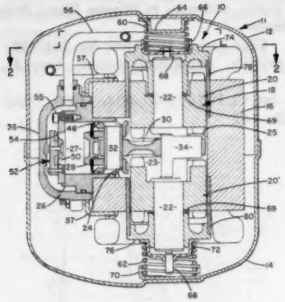
Filed Apr. 2, 1973, Ser. No. 347,305

Int. Cl. F04b *17/00*

U.S. Cl. 417—415 **5 Claims**

An electric motor including a stator and rotor are electrically connected for operation. The stator includes a first portion having a bore provided therein. A member defining a

cylinder is disposed in the bore. A shaft is operably connected to the rotor to rotate therewith. A piston, disposed in the



cylinder, is operably connected to the shaft, rotation of the shaft causing the piston to reciprocate within the cylinder.

3,836,291

PUMP-AND-MOTOR UNIT, PARTICULARLY FOR SUPPLYING FUEL

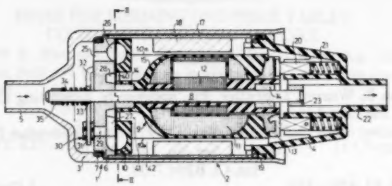
Siegfried Bottcher, Aldingen, and Hans-Reimer Speck, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 28, 1972, Ser. No. 310,115

Claims priority, application Germany, Nov. 29, 1971, 2159025

Int. Cl. F04b *17/00*

U.S. Cl. 417—423 **11 Claims**



A pump-and-motor unit comprises, within a sealed housing, a lateral channel pump and an electromotor, the rotor of which drives the impeller of the pump. The unit housing has at each end an axially aligned liquid inlet and outlet nipple, respectively. At the pressure side of the pump the liquid is guided from the lateral channel of the pump radially inwardly through a pressure channel provided in a lateral channel plate serving as a pump housing.

3,836,292

PLANETARY FLUID MOTOR WITH INTERNAL MESHING

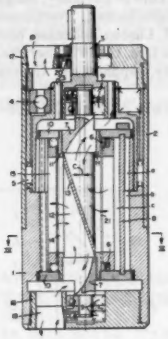
Daniil Andreevich Dudko, pereulok Mechnikova, 3, kv. 7, and Mikhail Danilovich Sur, ulitsa Vladimirskaya, 98, kv. 52, both of Kiev, U.S.S.R.

Filed Feb. 23, 1972, Ser. No. 228,701

Int. Cl. F01c *1/02*

U.S. Cl. 418—63 **4 Claims**

A planetary fluid motor with internal meshing in which there is provided a satellite pinion and two central or differential gears namely a stationary gear and a rotatable gear. Both differential gears are simultaneously caused to mesh and engage the satellite pinion, defining therewith a working space. The working space is divided into two zones with one



zone communicating with a means supplying pressurized working fluid and the other zone communicating with a working fluid discharge means.

3,836,293

ROTARY PISTON INTERNAL COMBUSTION ENGINE OF TROCHOIDAL CONSTRUCTION

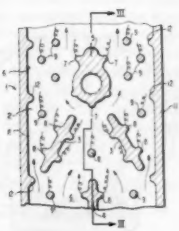
Heinz Lamm, Esslingen-St. Bernhardt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Feb. 2, 1973, Ser. No. 329,194

Claims priority, application Germany, Feb. 3, 1972, 2205015

Int. Cl. F01c *21/06;* **F04c** *29/04;* **F02b** *55/10*

U.S. Cl. 418—83 **28 Claims**



A rotary piston internal combustion engine of trochoidal construction which consists essentially of lateral parts and at least of one housing casing, in case of multi-disk internal combustion engines, of one or several intermediate parts, provided with hollow spaces for the accommodation of the cooling medium in each housing part and with ribs arranged in the hollow spaces; the ribs and/or the inner walls of the housing parts, particularly of the housing casing are provided with turbulence-producing projections, preferably within the area of the minor axis in the hot arc.

3,836,294

PISTON FOR ROTARY PISTON MACHINES AND MEANS FOR ITS MANUFACTURE

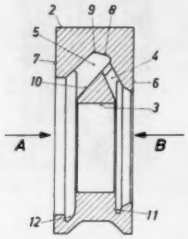
Johannes Steinwart, Bad Friedrichshall II, and Max Ruf, Oberisesheim, both of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm/Wurttemberg and Wankel GmbH, Lindau/Bodensee, both of, Germany

Filed Dec. 15, 1972, Ser. No. 315,581

Claims priority, application Germany, Dec. 24, 1971, 2164646

Int. Cl. F01c *21/06*; B22d *33/04*; F04c *29/04*

U.S. Cl. 418—91 3 Claims



A multi-apex fluid-cooled piston is provided with cavities at the apices into which coolant is fed from one of the piston faces and from which the coolant is conducted away towards the other face of the piston. In the region of the point of entry of the inlet passage into the outlet passage, the outlet passage is wider and spaced away from the radially outermost defining wall of the outlet passage. A tool is also provided for producing this multi-apex piston.

3,836,295

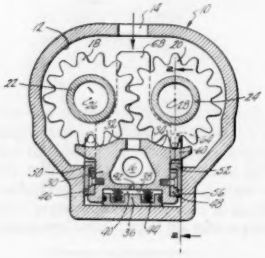
TEMPERATURE COMPENSATED GEAR PUMP WITH TRAVEL LIMITED WEARBLOCK

Allen Duckworth, Newington, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed Aug. 29, 1973, Ser. No. 392,666

Int. Cl. F01c *19/02*; F04c *15/00, 27/00*

U.S. Cl. 418—126 1 Claim



A gear pump has a peripheral tooth-sealing member with arcuate wiping surfaces to engage the respective teeth of the gears. The sealing member is positioned adjacent the outlet of the pump and is capable of only limited movement toward the gears due to a stop element anchored to the housing. The coefficient of thermal expansion and the length of the stop element are selected to compensate for thermal expansions of the housing sealing member(s) and gears so that a constant gap is maintained between the wiping surfaces and the teeth of the gears.

3,836,296

OIL SEAL FOR USE IN A ROTARY PISTON INTERNAL COMBUSTION ENGINE

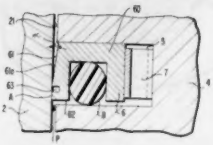
Hiroshi Sakamaki, Tochigi, and Hiroshi Ozeki, Hiroshima, both of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1972, Ser. No. 241,939

Claims priority, application Japan, Apr. 8, 1971, 46-25835[U]

Int. Cl. F01c *19/00*; F04c *15/00, 27/00*

U.S. Cl. 418—142 1 Claim



An oil seal is provided for use in a rotary piston internal combustion engine. The oil seal has an annular groove provided on the annular sliding face which is formed into a lip face having a lip angle α to an adjacent inside wall face of a side housing of the engine and which includes a contacting face formed on the radial inner peripheral side thereof and disposed in frictional contact with the inside wall face in such a position that the distance between both the radial inner peripheral faces of the groove and the oil seal is within the maximum width of a contacting face which may perform the normal operation of the oil seal.

3,836,297

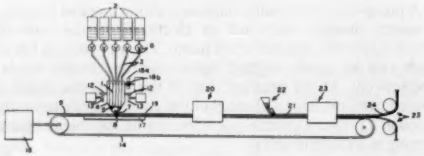
MARBLEIZING APPARATUS

John B. Weaver, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 87,068, Nov. 5, 1970. This application Oct. 10, 1972, Ser. No. 296,109

Int. Cl. B29d *7/00*

U.S. Cl. 425—104 5 Claims



Multiple plastisol compositions having differing decorative characteristics are simultaneously individually fed to a receptacle to form a heterogeneous mixture thereof. An applicator ball is positioned in an opening in the receptacle's bottom. Rotation of the ball during an oscillating movement of the receptacle, with the ball in contact with a moving substrate, produces a marbleizing effect in the coating applied thereby. Heat is used to gel the marbleized coating. A clear, unfilled plastisol coating is applied over the marbleized coating and the coatings are then heat fused.

3,836,298

DEVICE FOR MANUFACTURING COATED HARD-FOAM TILES OF POLYURETHANE

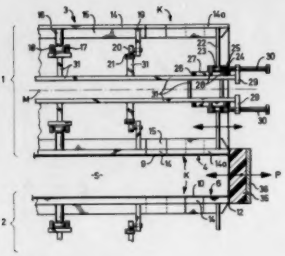
Rudolf Ernst, Muenchen-Sollen, Germany, assignor to Kunstoff-Verfahrenstechnik Dr. Ing. Ernst GmbH & Co. KG, Munchen, Germany

Filed May 23, 1973, Ser. No. 363,085

Claims priority, application Germany, May 24, 1972, 2225204

Int. Cl. B29d 27/00

U.S. Cl. 425—115 8 Claims



Apparatus manufacturing coated hard-foam polyurethane tiles, including endless and confronting conveying bands spaced to receive foamed polyurethane between, the bands being formed of elongate plates extending transversely of the band and connected together at juxtaposed edges like a chain, the plates being adjustable in length to vary the width of the bands for varying the width of the tiles being formed, the plates having meshed comb-like teeth and screw devices for holding the plates in predetermined lengths.

3,836,299

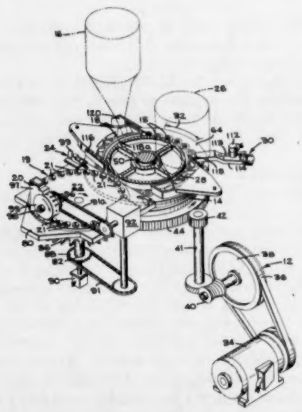
PRESS FOR FORMING ONE-PIECE TABLET CONTAINING SEEDS OR THE LIKE

Robert K. Houston, Santa Clara, and Donald W. Irving, San Jose, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Aug. 13, 1973, Ser. No. 387,887

Int. Cl. A01c 1/06; B30f 11/08

U.S. Cl. 425—128 21 Claims



An optical seed detector and seed remover for a tablet forming press capable of making, from frangible materials, tablets containing agricultural seeds. The optical seed detector monitors the deposit of a seed or seeds into each tablet by integrating the instantaneous projected dimensions of the seeds passing in front of a fiber optic sensor. If more or fewer seeds than the desired number are deposited, the tablet material and the seeds are eliminated from the press by a rejector before an imperfect tablet can be formed. In cases where only a single seed is desired in each tablet, the apparatus can thereby eliminate from the tablet press those tablets into which either no seed or two or more seeds were inadvertently deposited.

3,836,300

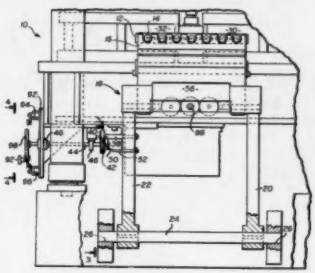
STRIPPING ACTUATOR FOR MOLDING MACHINE

John J. Farrell, Green Brook, N.J., assignor to Farrell Patent Company, Dunellen, N.J.

Filed June 25, 1973, Ser. No. 372,921

Int. Cl. B29c 7/00

U.S. Cl. 425—165 14 Claims



The stripping of a blow molding machine has to be adjustable to accommodate the length of the core rods on which articles are molded and to accommodate the length of the articles. This invention provides means, spaced from the stripper mechanism, and at a location for convenient access by an operator for adjusting the stroke of the stripper mechanism. Oscillating motion of the stripper is converted into rotary motion of a disc through less than 360°, and there are actuators adjustably connected with the disc for moving control units (switches) that control the stripper stroke.

3,836,301

INJECTION MOLDING MACHINE WITH LIFTING DEVICE

Karl Hehl, Siedlung 183, Lossburg, Wuerttemberg, Germany

Filed Jan. 31, 1973, Ser. No. 328,491

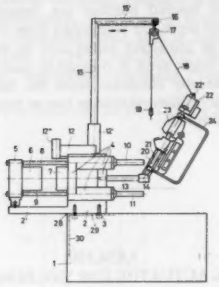
Claims priority, application Germany, Feb. 8, 1972, 2205782

Int. Cl. B29f 1/00

U.S. Cl. 425—192 15 Claims

The suggested lifting device for the injection molding machine includes a rotatable vertical column with a horizontal arm that carries an electric chain hoist for the purpose of con-

veniently lifting the injection unit or other heavy machine components from one position to another. The vertical



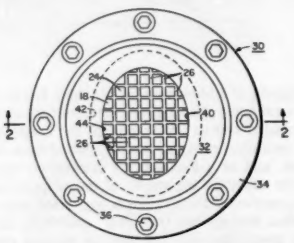
column is rotatably supported on a carriage which is adjustably mounted on the die closing unit itself for central location and maximum stability.

3,836,302

FACE PLATE RING ASSEMBLY FOR AN EXTRUSION DIE

Ralph M. Kaukeinen, Middlebury Center, Pa., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 31, 1972, Ser. No. 239,953
Int. Cl. B29f 3/04
U.S. Cl. 425—197 3 Claims



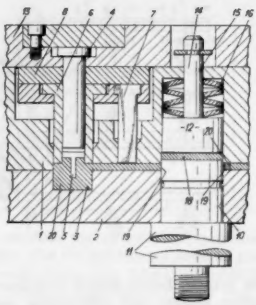
A mask or face plate, having an orifice or opening formed therethrough of desired size and configuration, is positioned against the discharge face of an extrusion die. The mask restricts the flow of extrudable material through the die so that such material will conform to the size and configuration of the opening or orifice provided in such mask or face plate. The mask or face plate is preferably part of a ring assembly which may be removably attached to the extrusion die structure. When such die is provided with a plurality of core pins for forming cellular or honeycomb structures, the orifice formed in the face plate is preferably provided with a tapered inlet opening in communication with the discharge face of such die, so as to partially collapse the peripheral cells engaging the tapered surface as they are moved radially inwardly by such surface, and thereby form an integral skin or sheath about the remainder of the honeycomb structure as it is being extruded.

3,836,303

METHOD OF AND APPARATUS FOR THE MANUFACTURE OF MOULDINGS

Clifford William Horley, Harlington, England, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 14, 1972, Ser. No. 315,092
Claims priority, application Great Britain, Dec. 22, 1971, 59574/71
Int. Cl. B29f 1/00
U.S. Cl. 425—214 4 Claims



In a transfer moulding apparatus according to the invention the delivery under pressure of moulding material from a transfer chamber to a mould cavity is effected by means of a transfer ram which is movable into and out of the transfer chamber independently of the plunger or ram by which the mould die parts are opened and closed, and the moulding material is delivered from the transfer chamber to the mould cavity by way of a port which forms a common boundary between at least a part of an interior wall surface of the mould cavity and a part of an interior wall surface of the transfer chamber, said transfer ram, after the compression of the moulding material by the pressure applied by the transfer ram, being movable so as to occlude said port. Thus, the transfer ram may be moved upon the attainment of a predetermined pressure in the transfer chamber, or after a predetermined "dwell" of the transfer ram in its operative condition.

3,836,304

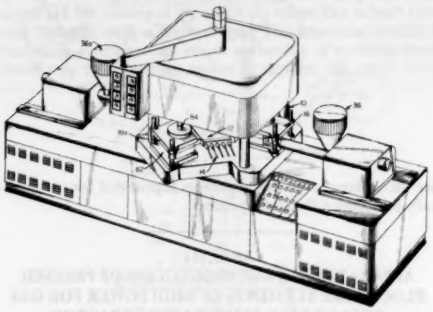
MULTIPLE INJECTION BLOW MOLDING MACHINE

Joseph A. Johnson, Brigantine, N.J., assignor to Jomar Industries, Inc., South Brigantine, N.J.

Continuation of Ser. No. 52,807, July 7, 1970, Pat. No. 3,690,799. This application June 6, 1972, Ser. No. 260,313The portion of the term of this patent subsequent to Sept. 12, 1989, has been disclaimed.
Int. Cl. B29d 23/03
U.S. Cl. 425—242 B 6 Claims

An injection blow molding machine for automatically forming hollow articles of plastic material has a horizontally disposed rotatable and elevatable turret having distinct sets of hollow parison pins projecting from its six side faces and surrounded by 60° angularly spaced apart operating stations. The turret is indexed first 120° clockwise from an opposing pair of parison mold stations and then two cycles of 60° counterclockwise to an opposing pair of blow mold stations and to an opposing pair of ejection stations to cause the pins to successively operatively occupy such stations. Hydraulically actuated rams for the parison clamps at the parison mold stations and the shaft for the turret are linked together by a rack and pinion arrangement so that the synchronously operating rams lift the turret one half the distance of the movable mold halves whereby the pins clear the separated parison and blow mold halves as the turret is indexed. The hollow pins carry operating

stems for the valves on the outer ends thereof with the turret ends of the pins having pressurized air inlets for air to act on the valve stems and to flow through the pins in the expansion



of the parisons at the blow mold stations and the cooling of the blown articles at the ejection stations where the articles are mechanically stripped from the pins.

3,836,305

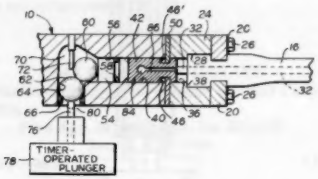
TRIGGER BAR ACTUATOR FOR MOLDING MACHINE

William Grazine, Piscataway, N.J., assignor to Farrell Patent Company, Dunellen, N.J.

Filed June 25, 1973, Ser. No. 372,922

Int. Cl. B29c *5/06, 6/04*

U.S. Cl. 425—242 B **10 Claims**



This indexing head for blow molding apparatus has a plurality of core rods projecting from each of the side faces of the head. A trigger bar is located in a recess of each side face in position to actuate simultaneously all of the valves in the core rods of the face in which the trigger bar is located. This effects blowing of parisons on the core rods when the core rods are at a blowing station. The head has improved and more reliable actuating mechanism for moving the trigger bar. Freely movable balls serve as motion-transmitting means for changing the direction of motion from a thrustor to the trigger bar by cam action of one ball against the other.

3,836,306

TRANSFER MOLDING APPARATUS

Lambert Pasch, Nutheim, and Heinz Wagemann, Aachen, both of Germany, assignors to Uniroyal A.G., Aachen, Germany

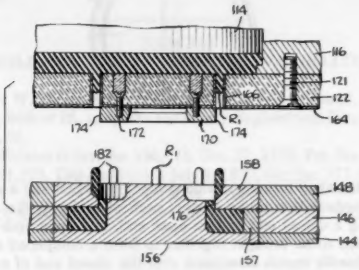
Filed July 16, 1973, Ser. No. 379,284

Claims priority, application Germany, Aug. 29, 1972, 2242447

Int. Cl. B29h *3/12*

U.S. Cl. 425—322 **23 Claims**

Apparatus for molding elastomeric stock, comprising an apertured, heat-resistant, flexible, insulation plate arranged between a heated mold and the discharge portion of an elastomeric stock injection unit such that a mold cavity is aligned with an array of apertures in the insulation plate which intercommunicate the mold cavity with an internal discharge chamber in the injection unit. A mold cavity cover is carried by the insulation plate and confronts the mold cavity, the cover and upper portion of the cavity when juxtaposed defining a constriction therebetween. When the mold and injection unit are moved relative to one another such that each presses against the other through the intermediary of the insulation



plate, there is effected expulsion and transferring of a portion of elastomeric stock from the injection unit into the mold cavity to be cured, an excess portion of elastomeric stock remaining in the injection unit being prevented from undergoing curing by means of the presence of the insulation plate. The constriction between the cover and the upper portion of the cavity generates a score line in the cured transferred portion of stock along which scrap cured in the cavity may be separated from the cured product.

3,836,307

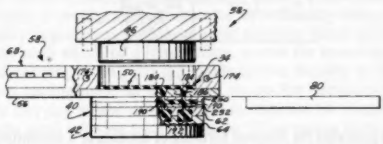
MOLDING APPARATUS

Don A. Taylor, 216 Mill St., Wadsworth, Ohio 44281

Division of Ser. No. 167,240, July 29, 1971, Pat. No. 3,748,075. This application May 11, 1973, Ser. No. 359,600

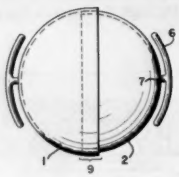
Int. Cl. B29b *5/04*

U.S. Cl. 425—251 **2 Claims**



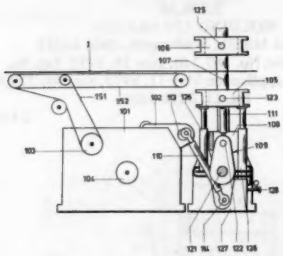
An improved apparatus for molding thermosetting material, such as strips of uncured mill rubber or other thermosetting elastomers, includes a preheater assembly which preheats the thermosetting material to a temperature which is below its curing temperature. A movable pot receives at least a portion of a charge of the preheated strip material at a loading station. The pot is then moved to a discharge or unloading station where a ram assembly is extended to force the thermosetting material from the pot into a mold. The ram assembly is then retracted and the pot is returned to the loading station. The pot is then filled so as to contain a charge which includes both preheated strip material and thermosetting material which was not forced into the mold on the previous cycle of operation. The pot is cooled at the loading station to maintain thermosetting material in the pot at a temperature below its curing or setting temperature. As the pot is being loaded, a slide block applies pressure against the mold and heats the thermosetting material in the mold to a temperature above its setting temperature.

3,836,308
SNOWBALL FORMING DEVICE
Robert Upright, 3331 Contesa Ct., Annandale, Va. 22003
Filed May 17, 1972, Ser. No. 254,079
Int. Cl. F25c *1/10*
U.S. Cl. 425—318 **8 Claims**



A snowball forming device comprising a first and a second semi-spherical cup-like means, each of said cup-like means having a closed end and an open end, said open ends being adapted to be brought together to form a completed sphere and handle means associated with the closed end of each of said semi-spherical cup-like means.

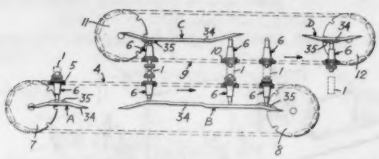
3,836,309
THERMAL FORMING APPARATUS
Alfons Wilhelm Thiel, Uferstrasse 15, Mainz/Rhein, Germany
Filed Aug. 30, 1973, Ser. No. 393,170
Int. Cl. B29c *17/00*
U.S. Cl. 425—383 **32 Claims**



Apparatus for thermal forming of articles in a thermoplastic web includes a thermal forming station wherein one or more die supports are vertically movable in timed relation with web feed, a common power unit being provided to operate a drive system for actuating the web feed intermittently and synchronously moving a die component or components, and adjustments are provided in the drive system for adapting the die action to form deep or shallow articles in the web and for varying the speed and incremental advance of the web.

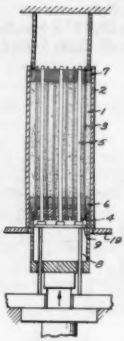
3,836,310
APPARATUS FOR THE REFORMING OF YARN PACKAGE CARRIERS MADE OF PLASTIC MATERIAL
Renato Crotti, 47, S.S. Romana Sud, Carpi, Modena, Italy (41012)
Filed June 23, 1972, Ser. No. 265,629
Claims priority, application Italy, June 25, 1971, 12771/71
Int. Cl. B29c *17/02*
U.S. Cl. 425—384 **6 Claims**

The axially deformed yarn package carriers are heated up to a temperature in which they become plastically deformable, and are subsequently stretched axially until they re-assume their original length. The thus reformed yarn package carriers



are thereafter cooled. An apparatus is provided for automatically performing the above process.

3,836,311
APPARATUS FOR THE PRODUCTION OF PRESSED BLOCK FUEL ELEMENTS OF HIGH POWER FOR GAS COOLED HIGH TEMPERATURE REACTOR
Karl-Gerhard Hackstein, Hanau; Milan Hrovat, Rodenbach, and Willi Wolff, Kahl, all of Germany, assignors to Nukem, G.m.b.H., Hanau, Germany
Filed Aug. 1, 1972, Ser. No. 277,103
Int. Cl. B29c *3/02*
U.S. Cl. 425—406 **6 Claims**

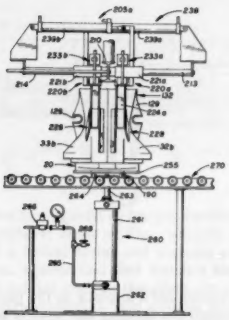


Molded or pressed block fuel elements of high power for gas cooled high temperatures are produced by molding in steel tools using outer dies or bars and punches arranged to be freely moveable in the axial direction and moving said moveable dies or bars and punches in the molding process.

3,836,312
APPARATUS FOR A SYSTEM TO EXTRICATE INTRICATE, CERAMIC SHAPES FROM MULTIPLE PIECE MOLDS
Fred L. Derror, Lucas, Ohio, assignor to Mansfield Sanitary, Inc., Perrysville, Ohio
Division of Ser. No. 139,622, May 3, 1971, abandoned, which is a division of Ser. No. 865,863, Oct. 13, 1969, Pat. No. 3,671,160. This application Dec. 4, 1972, Ser. No. 312,037
Int. Cl. B29c *7/00*
U.S. Cl. 425—441 **2 Claims**

A method and apparatus for extricating an intricate ceramic casting from a multiple piece mold. This concept is adapted for use with multiple piece molds which have at least two, opposed, side sections that form a cradle by which the casting may be supported. The cradle is grasped and subsequently positioned at a receiving locus. So position, the support for

the weight of the casting is shifted from the cradle onto a bat in order that the casting will float within the cradle. Thereafter, the sections of the mold forming the cradle are separated to extridate the casting therefrom. For some ceramic shapes it is highly desirable to invert the cradle prior to the deposit of the casting at the receiving locus. The subject concept includes such a method step. The apparatus disclosed comprises a carriage on which a plurality of multiple piece molds may be supported, means to separate the cradle from

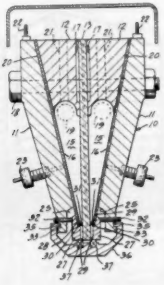


any other sections of the mold, an inversion mechanism for turning the cradle upside down, gripper means to grasp the cradle, transfer means within which the gripper means is supported and by which the cradle can be moved from the inversion mechanism to a receiving locus, a lift means at the receiving locus by which the support for the weight of the casting may be shifted from the cradle onto a bat and actuating means by which the gripper means—and thus the mold sections forming the cradle—can be separated after the weight of the casting is fully supported on the bat.

3,836,313
FLAT FILM EXTRUSION DIE

Larry O. Stafford, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Apr. 23, 1973, Ser. No. 353,908
Int. Cl. B29f *3/04*
U.S. Cl. 425—463 **13 Claims**

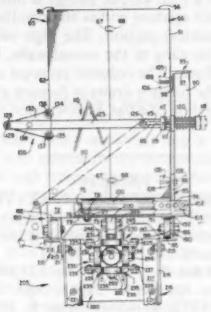


Flat film plastic extrusion die, which may be in the form of either a single slot or dual slot die. A body part forms the top of the die and has sloping side walls converging from their upper towards their lower ends. The body part may be in two parts divided by a divider where the die is a dual slot die. Die heaters form the closures for the melt chamber of the die and clamp thin metal liner sheets to the sloping sides of the body part by through bolts clamping the die heaters to the body. The sheets form the liner wall of the melt chamber and are sufficiently thin that pressure in the die chamber will conform the sheets into intimate contact with the inner walls of the heaters. The lower ends of the sheets depend into recessed portions of the heaters and form die lips. The die lips may be formed by the depending sheets or may extend along relatively thick silver soldered strips to define deckle lands at the lower ends of the sheets. Adjustment screws threaded in the die heaters are provided to adjust the space between the lands, or between the lands and a center divider where the die is a dual slot die.

3,836,314
MOLD AND CLAMP FOR USE IN AN AUTOMATIC CASTING MACHINE

Robert W. Meyer, South Elgin, and Robert G. Swanson, Dundee, both of Ill., assignors to M and S Engineering, Inc., Dundee, Ill.

Division of Ser. No. 100,718, Dec. 22, 1970, Pat. No. 3,801,255. This application July 6, 1973, Ser. No. 377,119
Int. Cl. B29c *1/16*
U.S. Cl. 425—451.9 **8 Claims**



An automatic casting machine having means for automatically and simultaneously introducing a casting material into a plurality of molds, filling means for automatically filling the molds to a predetermined level, mold carrying means adjustable to carry molds of different sizes, means for inverting the mold carrying means and the molds carried thereby to drain excess casting material therefrom, means for uprighting the mold carrying means and conveyor mechanism for transporting the mold carrying means from the filling means through a wall building station to the inverting means and thereafter through a draining station to the uprighting means and thereafter through a parts drying station to a mold unloading station and then to a mold conditioning station.

3,836,315
BURNER APPARATUS FOR FLAME PROPAGATION CONTROL

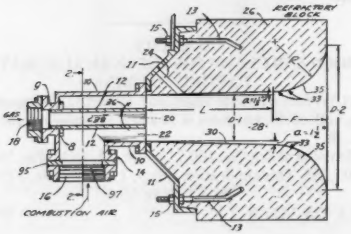
Howard Edward Shular, North Olmsted, Ohio, assignor to Pyronics, Inc., Cleveland, Ohio

Filed Oct. 14, 1971, Ser. No. 189,178
Int. Cl. F23b *11/00*
U.S. Cl. 431—9 **9 Claims**

A burner apparatus comprising a fuel burner and flame tunnel in combination. The tunnel is of a suitable refractory material and is substantially trumpet-shaped in cross section, comprising a first substantially cylindrical section and a second, flared section. The first, substantially cylindrical section preferably diverges in the direction of fuel and air flow at an angle of not more than about 3° and preferably about 1 ½°

from a cylindrical surface. The length of the substantially cylindrical first section is at least two and one-half and preferably four times as great as the inlet diameter thereof, and the diameter of the large, furnace end of the flared second section is at least two and one-half and preferably four times as large as the inlet diameter of the first section.

Combustion air and fuel are injected with a rotational motion into the flame tunnel. Combustion takes place in the flame tunnel, and a high kinetic energy is imposed upon the burning gas and air mixture within the comfines of the first, substantially cylindrical section. The high velocity attained causes the flame to cling to the tunnel walls, forming a substantially hollow flame. The reduced pressure at the center of the flame facing the furance draws in furnace atmosphere and enhances the formation of a flat, hollow flame even at high firing rates.



3,836,316

FLAME DETECTING APPARATUS

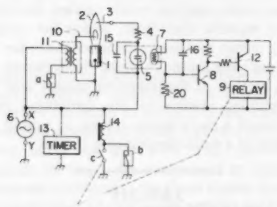
Kazutoshi Ikegami; Mitsuoki Yamamoto, both of Tokyo; Kenji Toudo, and Motosi Miyanaka, both of Yanai, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 8, 1973, Ser. No. 321,967

Claims priority, application Japan, Apr. 28, 1972, 47-42224; Apr. 14, 1972, 47-43447; Apr. 5, 1972, 47-33519

Int. Cl. F23n *5/08*

U.S. Cl. 431—79 **16 Claims**



In apparatus wherein an AC power source and a light emitting device are connected in series through a lead between a burner and a flame rod disposed in a place in which a flame is to exist, so as to detect the presence or absence of the flame in the form of the presence or absence of the output of light emission of the light emitting device, a flame detecting apparatus comprising a capacitor connected in parallel with the light emitting device, thereby to prevent a malfunction attributable to the stray capacity between the lead and ground, the deterioration of the insulation between the flame rod and the burner, or the like.

3,836,317

PERCUSSION TYPE PHOTOFLASH LAMP

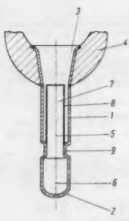
Josef Lukas, Augsburg, Germany, assignor to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH, Munchen, Germany

Filed June 15, 1973, Ser. No. 370,329

Claims priority, application Germany, June 20, 1972, 2230005

Int. Cl. F21k *5/02*

U.S. Cl. 431—93 **5 Claims**



To hold a counter anvil in place in the percussion tube of the lamp, a headed pin forming the anvil is supported in the cap-shaped closed end of the tube. The anvil abuts the tube end with its head. The head length is about twice its diameter so that the contact surface is sufficiently large for centering of the anvil inside the tube. The anvil portion of the pin extends in the percussion zone and carries an ignition material. The diameter of the anvil portion is selected such that there remains a sufficiently large gap between anvil and tube.

3,836,318

FLARE-STACK

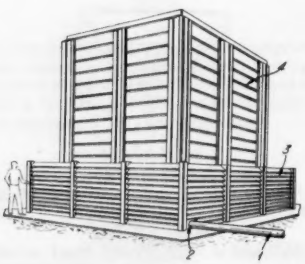
Denis Henry Desty, Weybridge, and Christopher John Young, Horton, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Aug. 9, 1972, Ser. No. 279,002

Claims priority, application Great Britain, Aug. 12, 1971, 3786/71

Int. Cl. F23d

U.S. Cl. 431—202 **2 Claims**



A flare-stack suitable for burning off waste gases comprises:

a. a honeycomb burner element on supports

b. flare-stack walls projecting vertically upwards from the edges of the burner element, the flare-stack walls and burner element being enclosed by

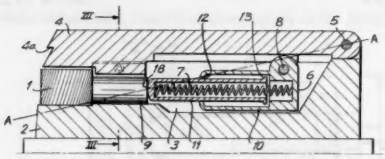
c. a draught fence around the base of the flare-stack walls. During operation of the flare-stack, air flows through the draught fence, below the flare-stack walls and into the combustion air tubes of the burner.

3,836,319

FLINT DRIVING MECHANISM FOR A LIGHTER

Jean Gaston Malamoud, 61 Avenue de Novel, Annecy, France

Continuation-in-part of Ser. No. 180,760, Sept. 15, 1971, abandoned. This application Sept. 7, 1973, Ser. No. 395,340
Claims priority, application France, Sept. 15, 1970, 70.33321
Int. Cl. F23q 1/02
U.S. Cl. 431—276 6 Claims



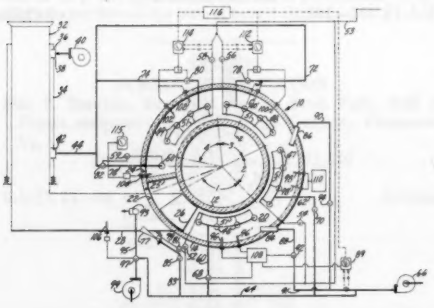
A lighter of the type ignited by friction between a rough surface and a pyrophoric stone or flint, wherein a flint striking device includes a helical spring and a spring guide and rests, on the one hand, against said flint which it keeps in contact with said rough surface and, on the other, on a portion of the lighter itself, characterized by said striking device resting on the lighter portion through a member onto which it is hinged in such a way that during its insertion, the hinge travels along a line joining a contact point of said device with the flint with a fulcrum of the member on the lighter portion. The device may have a simple cap to which a spring guide for the flint is pivoted, but alternatively a short connecting rod member may be provided, dispensing with the cap arrangement.

3,836,320

MINIMUM SCALE REHEATING FURNACE AND MEANS RELATING THERETO

Klaus H. Hemsath, Sylvania; Frank J. Vereecke, Palmyra, and Norman T. Ferguson, Maumee, all of Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio

Division of Ser. No. 235,610, March 17, 1972. This application Apr. 19, 1973, Ser. No. 352,708
Int. Cl. F27b 13/06
U.S. Cl. 432—11 4 Claims



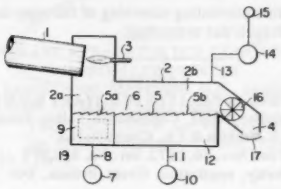
A ferrous work reheating furnace wherein high fuel efficiency is achieved with minimum scale formation. The work is initially heated in an atmosphere which is slightly oxidizing, the work being in a temperature range where scale formation does not readily occur. The work is then placed in a slightly reducing atmosphere after it reaches a predetermined elevated temperature. A unique arrangement is provided wherein a continuous reheating process takes place utilizing a protective atmosphere generated by hot air burners during the high temperature phase. These burners have a low air to fuel ratio and the gases are caused to flow toward the location where the work is introduced. The combustibles within the gases are combusted through the introduction of air into the portion of the furnace nearest the charge end. Additional efficiency is gained by using the spent gases to preheat combustion air for the burners.

3,836,321

CLINKER COOLING EQUIPMENT AND METHOD

Hiroshi Kobayashi, Yokohama, and Goro Okada, Tokyo, both of Japan, assignors to Babcock-Hitachi, Tokyo, Japan

Filed Aug. 1, 1973, Ser. No. 384,711
Claims priority, application Japan, Aug. 28, 1972, 47-85357
Int. Cl. F27b 7/38
U.S. Cl. 432—15 6 Claims



A clinker cooling equipment comprising a grate type clinker cooler connected to a rotary kiln where clinker is calcined, said clinker cooler being sectioned into a high temperature section on the inlet side and a low temperature section on the outlet side, said high temperature section being cooled by high pressure cooling air and said low temperature section being cooled by low pressure cooling air, and several fluidized bed type cooler units branched off from said high temperature section whereby small-sized clinker grains contained in the clinker falling from the kiln are fluidized in the high temperature section and separated from other larger-sized clinker grains, the thus separated small-sized clinker grains being blown into said fluidized bed type coolers and cooled therein while the other clinker being cooled in said grate type clinker cooler. By separating the clinker falling from the kiln into two groups, namely fine-grain clinker and other clinker, and then cooling said both groups of clinker with separate equipment respectively, the expensive grate type clinker cooler can be made smaller in size and elongated in its service life, and also the inexpensive clinker cooling equipment with high cooling efficiency and low dust-containing exhaust gas can be served in operation.

3,836,322

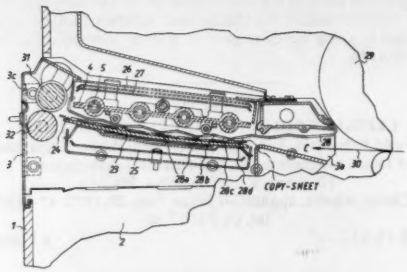
ELECTROPHOTOGRAPHIC DRYING AND FIXING DEVICE

Karl Harwig, Unterhaching, and Juergen Vossnacke, Pullach, both of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 26, 1973, Ser. No. 327,233
Claims priority, application Germany, Jan. 29, 1972, 2204214
Int. Cl. F26b 13/12
U.S. Cl. 432—59 6 Claims

An electrophotographic fixing device for a sheet which carries an electrophotographic image has a guide plate for guiding a copy sheet along a path. Electric heaters are located along the path for fixing the copy sheet, and in order to prevent contact of the copy sheet with the heaters, an elongated spacing wire is provided between the heaters and the copy sheet. The wire has a plurality of wire portions alternately bent in opposite directions toward and away from the path of the copy sheet, so that adjacent wire portions form kinks al-

ternately projecting in opposite directions so that every second kink projects toward the copy sheet and forms a small



engaging portion preventing scorching of the copy sheet when the copy sheet curls due to the heat.

3,836,323

PRE-HEATING APPARATUS IN ROTARY KILN PLANT

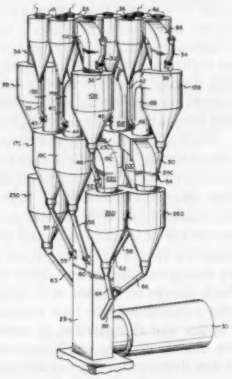
Erland Christoffer Engel, Copenhagen-Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Nov. 30, 1972, Ser. No. 310,999

Claims priority, application Great Britain, Dec. 2, 1971, 56051/71

Int. Cl. F27b *15/00*

U.S. Cl. 432—106 **6 Claims**



Pre-heating Apparatus for pre-heating pulverous raw material (e.g. cement raw meal) prior to its introduction into a rotary kiln for burning is disclosed. In construction the pre-heating apparatus includes four strings of treating units, each unit including separation and heat exchange zones, wherein the units of each string are disposed in series superimposed relationship in communication with the kiln and wherein the four strings are arranged symmetrically with respect to determined planes oriented with respect to the kiln axis and kiln outlet.

3,836,324

CONTINUOUS ROTARY HEAT TREATING FURNACE

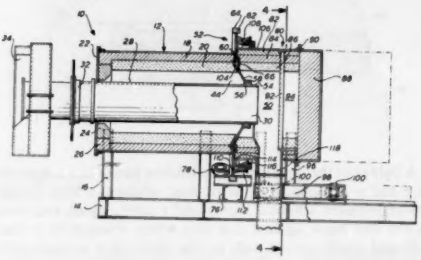
Frederick C. Shaefer, Mountainside; Frank Korzeb, Westfield, and William I. Bayly, Livingston, all of N.J., assignors to American Gas Furnace Company, Elizabeth, N.J.

Filed Aug. 6, 1973, Ser. No. 385,772

Int. Cl. F27b *7/08, 7/24, 7/32*

U.S. Cl. 432—112 **9 Claims**

A continuous rotary heat treating furnace including a furnace housing defining a heating chamber therein, and a cylindrical furnace retort for conveying work through the furnace, the retort being mounted for for rotation within the heating chamber. A circumferential collar is mounted in gas sealing relationship to, and extends about the periphery of the furnace rotort near the discharge end thereof. The collar extends radially beyond the circumference of the furnace housing, to preclude gaseous communication between the discharge end of the retort and the heating chamber. Roller support means



underlie the furnace housing, and engage with the periphery of the collar. An axially displaceable cylindrical sub-assembly, closed at one end by a heating chamber, approximately mates with the side of the collar facing the discharge end of the retort and includes spring biased sealing means perfecting the gas seal of the heating chamber. A downwardly directed opening in the sub-assembly permits the work passing from the retort, to drop directly through the sub-assembly to an underlying quench tank or the like.

3,836,325

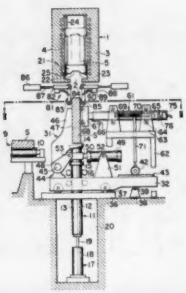
APPARATUS FOR CHARGING MATERIALS INTO VERTICAL HEATING FURNACE

Shoji Nakamura; Akira Matsufuji; Masahiro Tokushige, and Kunihiro Kato, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation and Mitsubishi Electric Corporation, both of Tokyo, Japan

Filed Dec. 11, 1973, Ser. No. 423,797

Int. Cl. F27b *5/12*

U.S. Cl. 432—241 **9 Claims**



In the vertical heating furnace of the bottom charge type having a lift to go up for charging a piece of to be-heated material, an apparatus for charging a piece of such material into the furnace, provided, for free vertical movement, with a cap for supporting the so charged piece of material by the engagement of the groove made on the bottom surface thereof with the tip of said piece of material.

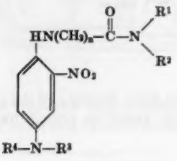
CHEMICAL

3,836,326
DYEING HAIR WITH NITRO-SUBSTITUTED PHENYLENE COMPOUNDS

Phillip Edward Sokol, Chicago, and Hu-Chu Tsai, Evanston, both of Ill., assignors to The Gillette Company, Boston, Mass.

Filed Nov. 18, 1970, Ser. No. 90,825
Int. Cl. A61k *7/12*
U.S. Cl. 8—10.1 **9 Claims**

Nitro-substituted phenylene compounds of the formula



Formula I

wherein R^1 and R^2 is each independently a hydrogen atom or lower alkyl, R^3 and R^4 is each independently C_2-C_3 hydroxyalkyl, and n is an integer from one to six, are used as dyes for dyeing keratinaceous material.

3,836,327
AROMATIC ALCOHOL-AROMATIC ALDEHYDE CARRIER DYEING OF AROMATIC POLYAMIDES

Friedrich F. Bartsch, Westfield, N.J., assignor to Sybron Corporation, Rochester, N.Y.

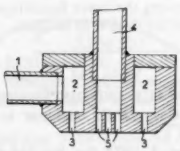
Continuation-in-part of Ser. No. 105,093, Jan. 8, 1971, abandoned. This application July 20, 1972, Ser. No. 273,516
Int. Cl. D06p *1/86*
U.S. Cl. 8—173 **9 Claims**

Yarns and other shaped articles made of aromatic polyamides of the non-flammable type are dyed by a process which includes treating the material with a cationic dye composition using as a carrier a blend of an aromatic aldehyde and an aromatic alcohol in which the aromatic alcohol is present in a ratio of greater than 1 part of the aromatic alcohol per each part of the aromatic aldehyde. A typical dye carrier blend consists of 10 grams per liter of dye bath of p-tolylaldehyde and 30 grams per liter of dye bath of benzyl alcohol.

3,836,328
SURFACE STERILIZATION

Max P. Beauvais, Eure, and Jacques Breil, Paris, both of France, assignors to Reynolds Metals Company, Richmond, Va.

Filed July 26, 1972, Ser. No. 275,430
Int. Cl. A61l *1/00*; **B05b** *7/08*
U.S. Cl. 21—56 **3 Claims**

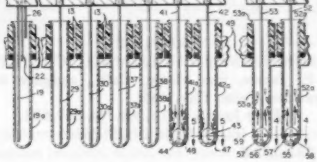


A surface sterilization method and blowtorch or burner for used in connection therewith. Jets of an ignited combustible mixture and a sterilizing fluid are projected toward a surface to be sterilized. The sterilizing fluid is heated by the flame of the burner and then contacts the surface to be sterilized in order to achieve sterilization. In a preferred form, saturated steam is used as the sterilizing fluid. The saturated steam becomes superheated as it expands when it leaves the burner and as it is heated by the flame thereof. The amount of saturated steam which leaves the burner is controlled to effect at least partial condensation of the superheated steam on the surface to be sterilized and the condensate is then re-evaporated with the aid of the heat of the flame. The blowtorch or burner construction establishes jets of an ignited combustible mixture and the sterilizing fluid which are mixed exteriorly of the burner.

3,836,329
METHOD AND APPARATUS FOR REMOVING LIQUID FROM CONTAINERS

Michael Jordan, South Merrimack, N.H., assignor to Damon Corporation, Needham Heights, Mass.

Filed Oct. 22, 1971, Ser. No. 191,889
Int. Cl. B08b *5/04*, *9/00*; **G01n** *31/00*
U.S. Cl. 23—230 R **19 Claims**



An apparatus for removing a liquid from a container such as a test tube comprising a probe having a diameter slightly smaller than the container inside diameter. The probe has a bore connected to a source of gas at a superatmospheric or subatmospheric pressure which effects a gas flow between the probe and container to entrain liquid from the container into the gas stream.

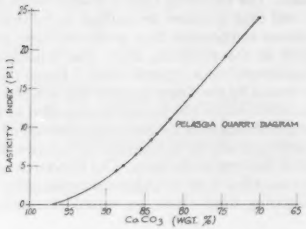
3,836,330
METHOD OF RAPIDLY DETERMINING THE PLASTICITY INDEX OF CALCEREOUS MATERIALS

Basil D. Melachrinos, Volos, Greece, assignor to Theophanis Paraskeva, Seymour, Conn.

Filed Feb. 22, 1973, Ser. No. 334,949
Int. Cl. G01n *33/24*, *33/38*, *33/42*
U.S. Cl. 23—230 R **5 Claims**

The plasticity index of calcareous materials is rapidly determined by drawing up a quarry diagram representing the calcium carbonate percentages and plasticity indices of representative samples from a quarry producing the calcareous materials, wherein the samples contain a clay component from the same quarry ranging from about 5 to about 30 percent of the

sample, and then determining the plasticity index of further samples of the calcareous materials by analyzing the samples



for calcium carbonate content and reading the corresponding plasticity index on the quarry diagram.

3,836,331

COLORIMETRIC DETERMINATION OF IRON

Lawrence L. Stookey, Ames, Iowa, assignor to Hach Chemical Company, Ames, Iowa

Division of Ser. No. 49,579, June 24, 1970,. This application Apr. 19, 1973, Ser. No. 352,734

Int. Cl. G01n *31/22*; **C07d** *57/34*

U.S. Cl. 23—230 R **2 Claims**

3-(2-pyridyl)-5,6-bis(phenylsulfonic acid)-1,2,4-triazine and certain salts thereof, e.g. sodium, are provided together with a method for forming such compounds. These compounds are useful as reagents in the spectrophotometric determination of iron in water or other solutions.

3,836,332

DETERMINATION OF VANILMANDELIC ACID IN URINE

Gerald E. James, San Mateo, Calif., assignor to Oxford Laboratories, Foster City, Calif.

Filed June 6, 1973, Ser. No. 367,632

Int. Cl. G01n *21/20, 33/16*

U.S. Cl. 23—230 B **3 Claims**

The concentration of vanilmandelic acid in urine is determined by contacting a measured urine sample with an anion exchange resin to adsorb contained vanilmandelic acid, washing residual urine from the resin, desorbing vanilmandelic acid from the resin, diazotizing the desorbed vanilmandelic acid, extracting the diazotized vanilmandelic acid from the diazotization reaction mixture with cyclohexanone, determining the absorbance of about 590 μ light by the extract and determining vanilmandelic acid content of the extract by comparing the absorbance of the extract with the absorbance of solutions having known contents of vanilmandelic acid.

3,836,333

SYSTEM FOR TIMING THE COAGULATION OF BLOOD

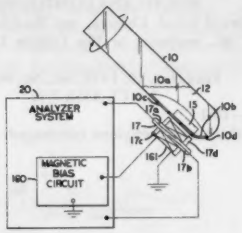
Michael D. Mintz, Edison Twp., Middlesex County, N.J., assignor to International Technidyne Corporation, Edison, N.J.

Continuation-in-part of Ser. No. 19,003, March 2, 1970, Pat. No. 3,695,842. This application Sept. 29, 1972, Ser. No. 293,396

Int. Cl. G01n *11/10, 33/16*

U.S. Cl. 23—259 **13 Claims**

Sensitivity of a magnetically coupled mechanical blood clot timing system is increased by providing an adjustable source of steady and time varying magnetic flux lines which couple a ferromagnetic member immersed in the blood sample with a variable conductance device disposed adjacent to the test vessel. A relative motion is produced between the member and the vessel. A predetermined change in the conductance of the device is detected when the blood clots and there is a change



in the magnetic flux lines. Stability of the system is improved by shaping the test vessel to permit free rotation of the member.

3,836,334

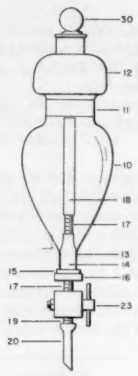
SEPARATORY FUNNEL

Narbik A. Karamian, 5117 Wilson Ln., Bethesda, Md. 20014

Filed Mar. 12, 1973, Ser. No. 340,108The portion of the term of this patent subsequent to Jan. 30, 1991, has been disclaimed.

Int. Cl. B01d *17/02*

U.S. Cl. 23—259 **6 Claims**



A separatory funnel particularly useful for preparing samples to be fed as a solution of a salt in an organic solvent for analysis of trace elements, for example, by atomic absorption spectrometry. The device consists of a specially designed flask structure and an adjustable conduit which extends up into the flask portion of the separatory funnel for removing the upper liquid layer. For removing the lower liquid layer the same conduit extending up into the flask may be used.

3,836,335

REAGENT STORAGE AND DISPENSING SYSTEM

William R. Eppes, Cary, N.C., assignor to Corning Glass Works, Corning, N.Y.

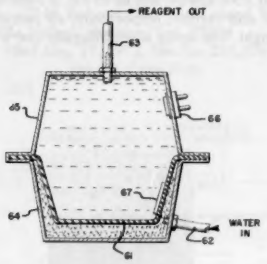
Filed June 1, 1973, Ser. No. 366,130

Int. Cl. G01n *1/10*

U.S. Cl. 23—259 **10 Claims**

Pressure vessels each have a movable separator which divides the vessel into two chambers. During filling, reagent is supplied to one chamber. During a dispensing operation,

water pressure is applied to the other side of the separator. Solenoid valves are selectively operated to dispense accurate



volumes of reagent from the vessels under pressure supplied by the water on the other side of the separator.

3,836,336

APPARATUS FOR CONTINUOUS XANTHATION AND SOLUTION OF ALKALI CELLULOSE

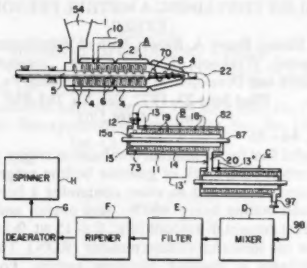
Koichi Yasui; Kazuo Yamamoto; Kazuo Itami; Kiyoshi Fujisawa, all of Miyazaki, and Toshio Sasaki, Osaka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 36,825, May 13, 1970, Pat. No. 3,671,279. This application Nov. 11, 1971, Ser. No. 197,765

Claims priority, application Japan, May 13, 1969, 44-36337; July 17, 1969, 44-56298

Int. Cl. C08b *9/00*

U.S. Cl. 23—260 **3 Claims**



This invention relates to an apparatus for xanthate-formation from alkali cellulose, carbon bisulfide and aqueous alkali solution. The apparatus is characterized by two kneaders connected one to the other. The first kneader is characterized by having a kneading rotor rotatably and reciprocatably mounted. The second kneader is characterized by having a rotor fitted with kneading pins studded thereon and inside cooling means.

3,836,337

LIXIVIATING APPARATUS

Henning Anton Bruniche-Olsen, Gentofte, Denmark, assignor to Aktieselskabet De Danske Sukkerfabrikker, Copenhagen, Denmark

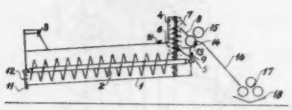
Filed Aug. 3, 1971, Ser. No. 168,593

Claims priority, application Netherlands, Aug. 4, 1970, 7011540

Int. Cl. B01d *11/02*

U.S. Cl. 23—270 R **2 Claims**

In a lixiviating apparatus comprising an inclined lixiviating trough having means for supplying disintegrated material at its lower end, two screw conveyors for transporting the disintegrated material from the lower end of the trough towards its upper end, means for discharging lixiviated material at its upper end, means for introducing lixiviating liquid at the upper end of the trough and means for removing enriched lix-



iviating liquid from its lower end, and two pressing devices for successive removal of liquid from the lixiviated material and means for recycling the pressed-off liquid to the trough, said first pressing device comprising a lower rotatable cylinder having a cylinder wall which is pervious to liquid and a rotatable pressure cylinder co-operating with said lower cylinder.

3,836,338

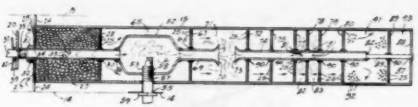
ANTI-POLLUTION EXHAUST BURNER AND MUFFLER FOR INTERNAL COMBUSTION ENGINES

Harold E. Arnold, 1332 E. Samuel St., Peoria Heights, Ill. 61614

Filed Feb. 11, 1972, Ser. No. 225,408

Int. Cl. F23g *7/06;* **F23c** *9/04*

U.S. Cl. 23—277 C **17 Claims**



Anti-pollution control especially relevant to internal combustion engines involves producing intense consuming heat in a combustion tube, delivering engine exhaust gases into preheating relation to the outside of the tube wall, directing the preheated exhaust gases into the tube and therein subjecting the gases to the consuming heat and effecting complete combustion of combustible material entrained in the gases, and finally receiving the completely burned out exhaust gases from the tube in an expansion and muffle chamber and releasing them to atmosphere.

3,836,339

REACTOR FOR THE PRODUCTION OF LEAD OXIDE WITH A HIGH FREE-LEAD CONTENT

Andre Jose Lesbros, and Max Jacques Raoul Brachet, both of Rieux, France, assignors to Societe Miniere Et Metallurgique De Penarroya, Paris, France

Filed June 7, 1972, Ser. No. 260,456

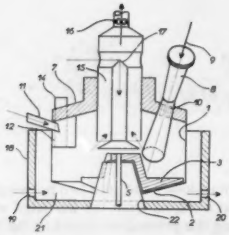
Claims priority, application France, June 10, 1971, 71.21066

Int. Cl. B01j *2/02;* **C01g** *21/02;* **H01m** *39/00*

U.S. Cl. 23—277 R **6 Claims**

A reactor for partially oxidizing molten lead with air to produce lead oxide with a high free-lead content includes a chamber, a variable speed rotatable stirrer positioned in the chamber, an air inlet venturi extending into the chamber and inclined from the vertical in the direction of rotation of the stirrer, a spout for introducing molten lead into the chamber, a deflector mounted upstream of the spout with respect to the direction of rotation of the stirrer, an exhaust duct for the lead oxide extending into the chamber, being substantially aligned

with the vertical axis of the chamber and having adjustable holes communicating with the atmosphere, means for cooling



the chamber and means for creating a sub-atmospheric pressure in the chamber.

3,836,340

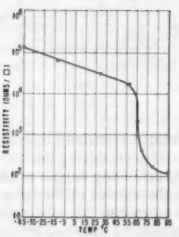
VANADIUM BASED RESISTOR COMPOSITIONS

Joel Alfred Conwicke, Youngstown, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 3, 1972, Ser. No. 214,648

Int. Cl. B22g 1/00

U.S. Cl. 29—182.5 **3 Claims**



Screen printable, air fireable compositions comprising a vanadium glass, boron, and as optional components, noble metal and/or a low melting inorganic binder, wherein the vanadium glass contains 5–55 percent vanadium metal and from a small but effective amount up to 10 percent of fluorine and, sulfur. Various electronic devices are readily made from these compositions. A unique feature of the devices is their sensitivity to voltage as well as temperature. Consequently, the fired compositions are particularly useful whenever switching devices are needed, e.g., as transient suppressors in electronic equipment.

3,836,341

WEAR RESISTANT COMPOSITE CYLINDER LININGS

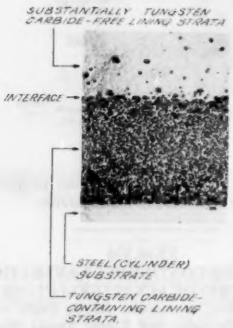
Gilbert A. Saltzman, Plainfield, N.J.; Tony U. Otani, Pulaski, Va., and Donald P. Lomax, Oconomouoc, Wis., assignors to Xaloy Incorporated, New Brunswick, N.J.

Continuation-in-part of Ser. No. 197,374, Nov. 10, 1971, abandoned. This application Oct. 10, 1972, Ser. No. 296,009

Int. Cl. B21c 37/06

U.S. Cl. 29—191.6 **6 Claims**

A wear- and corrosion-resistant lining material for extruder barrels or injection molding machine cylinders. constituted of a non-ferrous, tungsten carbide-containing alloy material incorporating from 30 to 45% tungsten carbide, 22 to 61% nickel, up to 37% cobalt, up to 12% chromium, 1.3 to 3.0% boron, 0.7 to 3.3% silicon, and up to 1.0, 3.3 and 0.6% of manganese, iron and carbon, respectively, all percentages being given by weight. The lining is centrifugally cast with the tungsten carbide particles dispersed differentially across a substantial proportion of the thickness thereof.



3,836,342

GASOLINE CONTAINING A METHYL PHENOL AND AN ETHER

Jer-Yu Shang; Barry A. Bisson, both of Wilmington, Del., and Raymond Wynkoop, Gladwyne, Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

Filed June 23, 1972, Ser. No. 265,850

Int. Cl. C10l 1/02

U.S. Cl. 44—56 **13 Claims**

A useful fuel for an internal combustion engine comprises a hydrocarbon base stock of gasoline boiling range, a methyl-substituted phenol and an ether containing a branched alkyl group and boiling below 460°F., said phenol and said ether each being present in amount (e.g., 0.1–15 wt. %) sufficient to increase the Research octane number (RON). The invention also includes a gasoline blending system. For example, preferred compositions can be made by blending 89 RON gasoline containing 5 vol. % p-cresol with 97 RON gasoline containing 5% methyl methoxy propane. Beneficial synergism is noted in such blends for RON blending values.

3,836,343

BRIQUETTE AND PROCESS FOR MAKING THE SAME

Ingo Romey, and Georg Koelling, both of Essen, Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Filed Mar. 14, 1973, Ser. No. 341,025

Claims priority, application Germany, Mar. 15, 1972, 2212460

Int. Cl. C10l 5/14, 5/40

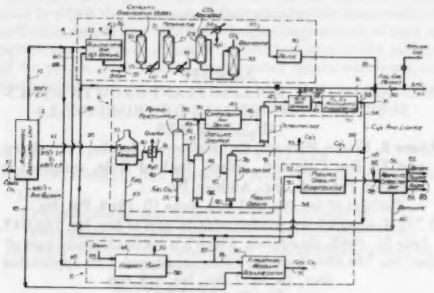
U.S. Cl. 44—25 **11 Claims**

A process for the production of smokeless carbon-containing briquettes is disclosed wherein particulate carbonaceous material is mixed with an aqueous suspension of copolymers of butadiene-acrylonitrile. The resulting mixture is compressed so as to form high strength smokeless briquettes.

3,836,344
PROCESS AND SYSTEM FOR THE PRODUCTION OF SUBSTITUTE PIPELINE GAS

Leonard Krawitz, 15 Richard, Needham, Mass. 02192; Frank J. Maslyk, 12118 Boheme Dr., and Leland W. Patterson, 418 Wycliffe, both of, Houston, Tex. 77024

Filed Aug. 17, 1972, Ser. No. 281,376
Int. Cl. C10g 9/46
U.S. Cl. 48—211 17 Claims

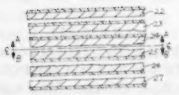


Process and system for producing substitute pipeline gas (SPG) from crude oil. The process includes separation of the crude oil into several fractions, catalytic gasification of the crude oil fraction boiling below about 375°F., pyrolysis treatment of the middle distillate of the crude oil, blending of the catalytically gasified product and the C_3's and lighter product produced by the pyrolysis treatment, and the production of fuel oil from the heavy high boiling fraction of the crude oil feed. A self-contained hydrogen generation plant is included for hydrotreatment within the system.

3,836,345
LAMINATED GRINDING WHEEL

Richard H. Graham, Cincinnati, Ohio, assignor to Cincinnati Industries, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 784,032, Dec. 16, 1968, abandoned. This application Aug. 9, 1971, Ser. No. 170,333
Int. Cl. B24d 11/02
U.S. Cl. 51—297 7 Claims



A laminated grinding wheel composed of a plurality of plies of universally stretchable creped paper bonded together by means of a thermosetting resin, with layers of abrasive grit particles interposed between adjoining plies of the creped paper, the grit particles being embedded or nested in the gatherings of the creped sheets which effectively stretch and flex to receive the grit particles with essentially negligible puncturing of the creped paper plies as the laminated structure is molded under pressure prior to curing.

3,836,346
APPARATUS FOR PRODUCING FIBROUS MATERIAL

Charles J. Stalego, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 17, 1973, Ser. No. 389,094
Int. Cl. C03b 37/02
U.S. Cl. 65—1 20 Claims

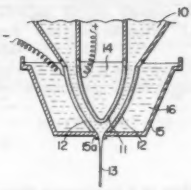
Apparatus for producing filaments from heat-softened filament forming material comprising a container for holding heat-softened filament forming material, two rows of orificed projections extending from a wall of the container for emitting streams of heat-softened filament forming material for attenuation into filaments and means for attenuating the streams

into filaments that tends to cause movement of air across each of the rows towards the other during attenuation; the orificed projections in each of the rows have thicker wall portions at their windward sides to resist the erosive effect of air movement during attenuation.

3,836,347
CONTINUOUS PRODUCTION OF LIGHT-CONDUCTING GLASS FILAMENTS WITH REFRACTIVE INDEX GRADIENT

Seiichi Ono; Ken Koizumi, and Itami Mitsugi Yoshiyagawa, all of Takarazuka, Japan, assignors to Nippon Selfoc Kabushiki Kaisha, Tokyo-To, Japan

Continuation-in-part of Ser. No. 876,002, Nov. 12, 1969, abandoned. This application Apr. 6, 1972, Ser. No. 241,832
Claims priority, application Japan, Nov. 18, 1968, 43-84723
Int. Cl. C03b 37/00, 15/00; G02b 5/14
U.S. Cl. 65—2 7 Claims



An electric current is passed by means of electrode means through a body of molten glass which is maintained at a temperature above its softening point and is flowing in contact with the electrode means to be spun continuously into a glass filament, whereby a modifying oxide is caused to have its ions undergo ion-exchange with ions which can increase or decrease the refractive index of the glass through the ion-exchange and are provided by the electrode means or is caused to undergo electrolysis by the electric current. The ion-exchanger or electrolysis is so controlled that a distribution of refractive index in which the refractive index of the glass decreases continuously from the center line and toward the outer surface of the filament is established within the filament.

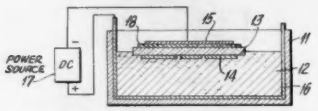
3,836,348
METHOD FOR MANUFACTURING OPTICAL INTEGRATED CIRCUITS UTILIZING AN EXTERNAL ELECTRIC FIELD

Toru Sumimoto; Shigeo Matsushita; Tadafumi Fujiwara, all of Tokyo; Ken Koizumi, and Tetsuya Yamazaki, both of Hyogo, all of Japan, assignors to Nippon Selfoc Company, Limited, Tokyo, Japan

Filed Feb. 22, 1973, Ser. No. 334,593
Int. Cl. C03c 21/00
U.S. Cl. 65—30 7 Claims

A method for manufacturing optical integrated circuits forms light guide paths in a substrate by an ionic exchange

process. Ions initially present in the substrate are replaced by ions from a source thereof to locally increase the substrate index of refraction, thereby forming light guides, in a pattern dependent upon a mask disposed intermediate the substrate and the ion source.



An electric field is externally applied in the direction of ionic migration to provide light guide walls exhibiting abrupt variations in refractive index.

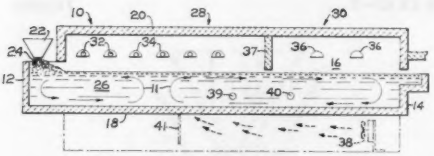
In accordance with one aspect of the present invention, a light guide may be shifted into the interior of the substrate.

3,836,349

METHOD OF MAKING GLASS

Leonard A. Knavish, Plum Borough, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 26, 1972, Ser. No. 300,952
Int. Cl. C03b 5/22
U.S. Cl. 65—134 **14 Claims**



Cooling of flat glass in a continuous glass-melting furnace from at least two locations within the molten glass, in combination with substantial cooling through the bottom of the furnace, enables operation of the furnace at heretofore unattainable throughputs. The use of submerged coolers in combination with bottom cooling reduces convection flow and convolutions in the glass, thereby improving the quality of the resulting glass. Signficantly reduced fuel consumption per ton of glass product is also achieved.

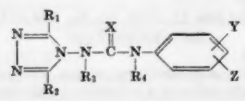
3,836,350

UREIDOTRIAZOLES AS YIELD INCREASING AGENTS FOR CROP PLANTS

Maged M. Fawzi, and Bruno Quebedeaux, Jr., both of Wilmington, Del., E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 191,061, Oct. 20, 1971, abandoned. This application Sept. 29, 1972, Ser. No. 293,540
Int. Cl. A01n 9/22
U.S. Cl. 71—92 **3 Claims**

Phenylureidotriazoles of the formula:



where R_1, R_2, R_3, and R_4 are hydrogen or alkyl, X is oxygen or sulfur, Y is hydrogen or fluorine and Z is hydrogen, halogen, nitro group, cyano group, trifluoromethyl, alkyl, alkoxyl or alkylthio group, are effective as antisenescence agents. They are useful for increasing the fruit set and enhancing development of crops such as grapes, wheat, and soybeans and for increasing the life of cut flowers.

Exemplary of the class is the compound 4-(3-phenylureido)-4H-1,2,4-triazole.

3,836,351

METHOD OF CONTROLLING PLANT GROWTH WITH 3-SUBSTITUTED-PYRIDO [3,2-D]PYRIMIDINE-2,4-(1H,3H)-DIONES

Anson R. Cooke, Hatboro, Pa.; Richard L. Jacobs, Perrysburg, and Ell Dee Compton, Toledo, both of Ohio, assignors to Amchem Products, Inc., Ambler, Pa.

Division of Ser. No. 832,026, June 10, 1969, Pat. No. 3,752,816, which is a continuation-in-part of Ser. No. 740,047, June 26, 1968, abandoned, which is a continuation-in-part of Ser. No. 740,089, June 26, 1968, abandoned. This application Dec. 26, 1972, Ser. No. 318,406
Int. Cl. A01n 9/22
U.S. Cl. 71—92 **12 Claims**

A method for controlling plant growth and compounds used in such method. The method includes the step of applying a composition comprising substituted pyrido[3,2-d]pyrimidine-2,4(1H,3H)-diones as herein described to the locus to be protected

As new compositions of matter, 3-substitutedpyrido [3,2-d]pyrimidine-2,4(1H,3H)-diones, where the 3-substituent is a member of the group consisting of alkyl groups having from 2 to 8 carbon atoms, dimethoxyethyl, aralkyl groups such as benzyl, chlorosubstituted benzyl, and lower alkyl and methoxy substituted benzyl, cycloalkyl groups having from 3 to 8 carbon atoms, pyridyl substituted alkyl groups having from 1 to 2 carbon atoms, alkenyl groups having not more than 8 carbon atoms, tetrahydrofurfuryl aryl, pyrrolidino, piperidino, homopiperdino, and septamethyleneimino, and 1,3-disubstituted analogues.

3,836,352

HERBICIDAL METHOD UTILIZING N SUBSTITUTED HETEROCYCLIC COMPOUNDS

Wendell Gary Phillips, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 878,918, Nov. 21, 1969, Pat. No. 3,702,361. This application June 7, 1972, Ser. No. 260,674
Int. Cl. A01n 9/22
U.S. Cl. 71—94 **4 Claims**

Pyridinium, pyridazinium, pyrimidinium, and pyrazinium halides respectively having an N-(phenacyl) substituent and the corresponding ylids obtained therefrom by alkaline treatment which compounds are useful as herbicides and/or insecticides.

3,836,353

PELLET RECLAMATION PROCESS

Carl A. Holley, 116 Marian Ave., Glenshaw, Pa. 15116

Continuation of Ser. No. 768,727, Oct. 18, 1968, abandoned. This application Mar. 24, 1971, Ser. No. 127,748
Int. Cl. C21b 1/30
U.S. Cl. 75—3 **7 Claims**

A method of recovering iron and oxide impurities from steel furnace dust in which the dust first is mixed with finely divided

coke and then this mixture is pelletized. The green pellets thus formed are deposited over a layer of burnt pellets on a rotary hearth which successively conveys the pellets first through a drying zone, then through an initial heating zone in which the pellets are gradually raised to a temperature at which the coke starts to burn, then through a decontamination zone in which the pellet temperature is rapidly raised to a degree at which zinc, lead and sulfur impurities vaporize and in which these impurities are carried off and collected as oxides, and finally the pellets are carried through a reoxidation and hardening zone in which the temperature thereof is further increased to a sufficient degree and held for a long enough period of time to permit the growth of grains of an oxide of iron on the surface of the pellets, thus to form hard bonded pellets which are not fused together.

3,836,354

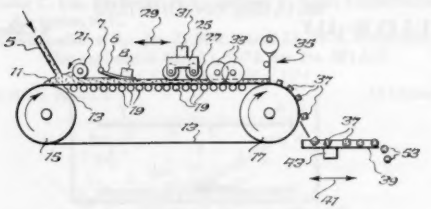
PRODUCTION OF PELLETS

Fritz O. Wienert, 394 Roosevelt Ave., Niagara Falls, N.Y. 14305

Continuation-in-part of Ser. No. 156,910, June 25, 1971, abandoned, which is a continuation-in-part of Ser. No. 785,132, Dec. 19, 1968, abandoned. This application May 16, 1973, Ser. No. 360,640

Int. Cl. C21b *1/22*; **C22b** *1/24*

U.S. Cl. 75—3 **23 Claims**



Durable pellets of a uniform desired size and uniform dense particle packing are produced from a mixture of a liquid, and if desired, fusible and pyrolyzible hydrocarbons and a binder, with finely divided particles of carbon-reducible oxides or oxidic materials, carbon, and mixtures thereof, the particles being in sizes favorable to dense packing. Such a mixture is spread on a horizontal surface to form a layer of uniform desired thickness which is consolidated, by moving a vibrating face under a load in contact with and over the upper surface of said layer, to a densely packed plastic layer of uniform thickness, a slight amount of the liquid being exuded and wetting the vibrating face. The layer is then divided into cube-like bodies of equal size which are rounded by tumbling to pellets of uniform size and uniform dense particle packing. The pellets may be dried for subsequent heat induration or partially dried and impregnated with a binder solution prior to heat induration, or heated for bonding by hydrocarbons and their pyrolysis residues when hydrocarbons are employed in the mixture from which the pellets are formed.

3,836,355

STEEL POWDER CONTAINING PHOSPHORUS

Per Folke Lindskog, and Lars-Erik Svensson, both of Hoganas, Sweden, assignors to Hoganas AB, Hoganas, Sweden

Filed Apr. 11, 1973, Ser. No. 349,918

Claims priority, application Sweden, May 2, 1972, 005754/72

Int. Cl. B22f *1/00*; **C22c** *39/54*

U.S. Cl. 75—.5 BA **9 Claims**

In the manufacture of articles by compacting and sintering steel powder it is desired that the articles shall neither expand nor shrink during the sintering process. It has been found useful to incorporate into the steel powder an iron-phosphorus alloy powder having the approximate composition Fe_3P, in a quantity to give the article a phosphorus content of 0.2 – 3 per cent by weight.

3,836,356

METHODS OF TREATING SILICIOUS MATERIALS TO FORM SILICON CARBIDE

Meherwan C. Irani, Pittsburgh, Pa., assignor to Eugene F. Buell, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 764,041, Sept. 26, 1968, abandoned. This application Sept. 5, 1969, Ser. No. 855,766

Int. Cl. C21B *13/00*

U.S. Cl. 75—33 **5 Claims**

A method is provided for treating oxygen bearing silicious materials, particularly those containing ferrous metal to produce silicon carbide and metallic iron comprising the steps of mixing a silicious material with at least a stoichiometric amount of carbon to combine with the oxygen bearing silicon compounds in the material to form silicon carbide and to reduce the oxygen compounds of iron to the metallic state, heating the mixture in a non-oxidizing atmosphere to a temperature in excess of 2,500°F., holding the temperature until there is no further reaction between silicon and carbon, comminuting the resulting product to free any metallic iron formed, separating the metallic iron magnetically and collecting the non-magnetic residue as silicon carbide.

3,836,357

DIRECT REDUCTION PROCESS FOR PRODUCTION OF ALUMINIUM

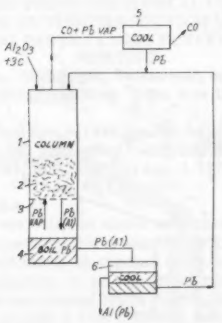
Ernest William Dewing, Arvida, Quebec, Canada, assignor to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed Feb. 1, 1973, Ser. No. 328,747

Claims priority, application Great Britain, Feb. 8, 1972, 5901/72

Int. Cl. C22b *21/02*

U.S. Cl. 75—68 A **3 Claims**



In a process for the production of aluminium, alumina is reacted with carbon at an elevated temperature in the range of 1,600° – 2,500° C. The heat to support the endothermic reaction is provided by passing a stream of lead and/or bismuth vapour into the mass and allowing the metal vapour to condense to the liquid phase. The liquid metal alloys with the produced aluminium to reduce its activity and to remove it from the reaction zone whilst the flow of metal vapour through the reaction zone reduces the concentration of carbon monoxide.

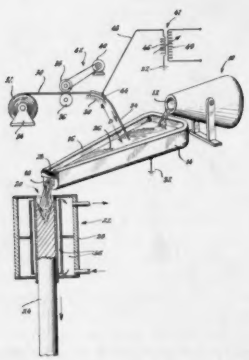
3,836,358
ADDITION AGENT
Robin Mackay Forbes Jones, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.
Filed July 16, 1973, Ser. No. 379,565
Int. Cl. C22c *13/20*
U.S. Cl. 75—122 10 Claims

Composition and process for improving the castability of nickel-chronium alloys with addition agent comprising nickel, chromium, iron, silicon and boron.

3,836,359
METHOD OF PRODUCING LEADED STEEL
Jerry D. Thomas, Parma, and Cecil B. Griffith, North Royalton, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio
Filed June 19, 1972, Ser. No. 264,012
Int. Cl. C22c *33/00*
U.S. Cl. 75—129 13 Claims

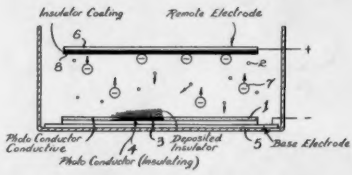
High lead content of uniformly dispersed finely divided particles is obtained in cast steel through a programmed addition of lead to molten steel in a vessel and control of other process factors, such as temperature, agitation and slag cover, affecting dissolution and retention of lead in molten steel. In the addition of lead, an initial quantity is introduced to the steel, large with respect to the time during which it is added as compared with the total lead added relative to the total time span of lead addition, and subsequently additional led is added, the total sufficient to produce a lead content in the steel greater than 0.15 percent by weight and no greater than 0.26 percent by weight. Preferably the total lead is introduced as three to five discrete additions at time intervals of one to fifteen minutes.

3,836,360
METHOD AND APPARATUS FOR PRE-HEATING AND ADDING MASTER ALLOY TO A COPPER MELT
Robert S. Bray, Chesire, Conn., assignor to The Anaconda Company, New York, N.Y.
Filed July 10, 1972, Ser. No. 269,965
Int. Cl. C22c *1/00*
U.S. Cl. 75—135 7 Claims



Method and apparatus for pre-heating and continuously adding a dilute master alloy, for example, such as a master alloy of 2 percent boron-balance copper, to a copper melt flowing through a launder from a source of the molten metal, such as a furnace, into the top of a casting mold. The master alloy is formed as a wire, and the launder is made electrically conductive or an inert electrode is inserted into the molten metal flowing through the launder, while the wire is continuously fed into the flowing metal. In order to avoid quenching of the molten metal and to hasten the introducton of the alloy element into the melt so that thorough alloying can occur during the brief residence time of the flowing metal in the launder, the wire is pre-heated to a temperature level close to its melting point, e.g. within 100°C of the melting point, by feeding an electrical current longitudinally through a predetermined legnth of the wire as it is being fed continously into the flowing metal. The electrically conductive launder or immersed electrode and molten copper serve as one portion of the circuit, and an electrically conductive member positioned to engage the moving wire at a predetermined distance from the liquid level serves as another portion of the circuit, so that the predetermined length of wire immediately above the liquid level is heated.

3,836,361
METHOD OF DEVELOPING AN ELECTROPHOTOGRAPHIC IMAGE WITH A BIAS FIELD
Kenneth A. Metcalfe, Lockleys; Alwin S. Clements, Largs Bay, and Clive W. Wilson, Oaklands Park, all of Australia, assignors to The Commonwealth of Australia, care of the Secretary, Department of Supply, Parker, Canberra, Australia
Filed Oct. 2, 1972, Ser. No. 294,000
Claims priority, application Australia, Sept. 30, 1971, 6478/71
Int. Cl. G03g *9/04, 13/10, 15/10*
U.S. Cl. 96—1 LY 6 Claims



A method of developing electrostatic images comprising subjecting a surface containing an electrical image to a liquid developer having two dissimilar components, one of which is a first developer component having a polarity such that it develops the image by attracting the first developer component to the image. A bias field is maintained through the liquid such that as the image is developed by the first developer component the second developer component is moved away from the surface being developed. When the first developer has been differentially developed on the surface the polarity of the bias field is reversed to cause the second developer component to be deposited on the first developer component.

3,836,362
IMAGING METHOD
William L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 24, 1972, Ser. No. 309,542
Int. Cl. G03g *13/22*
U.S. Cl. 96—1.1 7 Claims

A partially migrated migration imaged member comprising a softenable layer and migration marking material partially migrated in image configuration in depth in said softenable layer in response to an electrical latent image of a first polarity is uniformly charged to a low potential opposite the polarity of the electrical latent image of a first polarity, either with or without uniform, e.g., ambient exposure to electromagnetic

radiation to thereby desensitize the partially migrated image to further softening development. Charging to low opposite polarity potential during softening development can be used to terminate the effect of development.

3,836,363

COLOR ELECTROPHOTOGRAPHY USING A PHOTOCONDUCTIVE LAYER ON BOTH SIDES OF A MULTICOLOR SCREEN

Thomas Miles Plutchak, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,352
Int. Cl. G03g 13/22, 15/22
U.S. Cl. 96—1.2 14 Claims

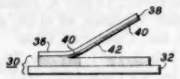
A novel electrophotographic reproduction process for producing a plurality of multicolor prints from a single exposure of a color original. The process makes use of a novel color electrophotograhpic recording element which preferably comprises a pair of pan-sensitive photoconductive layers, each having a conductive electrode in electrical contact therewith, and a multicolor additive filter mosaic which is sandwiched between the conductive electrodes of the photoconductive layers during the reproduction process.

3,836,364

METHOD OF MAKING MULTIPLE IMAGES FROM A MIGRATION IMAGED MEMBER

Luke C. Lin, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 21,800, March 23, 1970, abandoned. This application Aug. 17, 1972, Ser. No. 281,615
Int. Cl. G03g 13/00, 13/14
U.S. Cl. 96—1.4 12 Claims



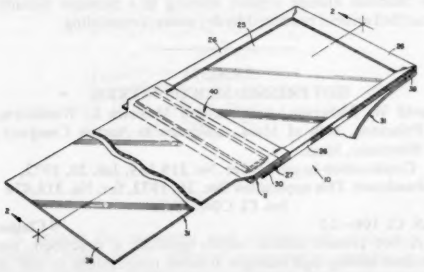
A migration imaged member is contacted with a transfer member wherein upon separation of said members, migration material from said migration imaged member is transferred in image configuration to said transfer member.

3,836,365

NOVEL PHOTOGRAPHIC PRODUCTS AND PROCESSES

Jerome L. Reid, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 23, 1973, Ser. No. 344,166
Int. Cl. G03c 7/00, 5/54, 1/40
U.S. Cl. 96—3 34 Claims



The present invention relates to photography, particularly, to photographic products specifically adapted for employment in specified photographic diffusion transfer color processes and, more particularly, to photographic products which comprise a fixed or permanent composite photosensitive structure including, as essential layers, in sequence, a first dimensionally stable layer transparent to actinic radiation; a first polymeric layer dyeable by a diffusion transfer process dye image-forming material; a processing composition permeable opaque layer; a photosensitive silver halide layer having associated therewith a diffusion transfer process dye image-forming material; a second polymeric layer dyeable by a diffusion transfer process dye image-forming material; a second dimensionally stable layer transparent to actinic radiation; means for providing opacifying agent intermediate the second dyeable polymeric layer and the next adjacent photosensitive silver halide layer; and means for providing a diffusion transfer process processing composition preferably intermediate the second dyeable polymeric layer and the next adjacent photo-sensitive silver halide layer; and to specified photographic diffusion transfer color processes employing such products.

3,836,366

PLANOGRAPHIC PRINTING PLATES AND METHOD FOR THEIR PREPARATION

Julius L. Silver, Manchester, Conn., assignor to Lith-Kem Corporation, Lynbrook, L. I., N.Y.

Filed Sept. 11, 1972, Ser. No. 288,042
Int. Cl. G03f 7/02
U.S. Cl. 96—33 8 Claims

A planographic printing plate base coated with a polymeric hydrophilic material sensitizable by a diazo compound wherein the surface of the polymeric hydrophilic material is coated with a diazo resin sensitizer and a diazonium salt sensitizer. The resulting printing plate is highly resistant tc "scumming" over extended usage, is also highly resistant to dot sharpening and is characterized by quick start-up and long run.

3,836,367

METHOD FOR PHOTO-MECHANICAL COMPOSITION OF DESIGNS ON STENCILS FOR FILM AND SCREEN PRINTING, PARTICULARLY ROTARY SCREEN PRINTING

Martin Klemm, Gerlafingen, Switzerland, assignor to Fritz Buser AG., Maschinenfabrik, Wilex near Utzenstorf, Switzerland

Filed Apr. 6, 1972, Ser. No. 241,609
Claims priority, application Switzerland, Apr. 13, 1971, 5265/71; June 21, 1971, 9055/71; Aug. 3, 1971, 11432/71
Int. Cl. G03c 5/00
U.S. Cl. 96—36.4 7 Claims

To improve the detail on screen printing, in which images are applied to a printing grid or screen in which a photo-sensitive layer is utilized to be exposed in accordance with the image or composition to be printed, and the non-exposed image portions are removed before printing, the screen is pre-processed to provide it with a smooth surface so that the photo-sensitive layer can, itself, be applied on the screen with a smooth surface of uniform and controllable thickness directly over the printing grid; in a preferred form, the interstices of the printing grid or screen are filled with a filler, and the surface of the grid and the filler is then treated to remove that portion of the filler which is above the grid elements, leaving the filler within the interstices, and a smooth surface over which the photo-sensitive layer can be applied. A plurality of such applications can be made, the photo-sensitive surface itself being exposed to form a lattice screen, which is treated to provide a smooth surface on which a further photo-sensitive layer which is to be exposed with the image, can then be applied.

3,836,368

PHOTOPOLYMERIZABLE ELEMENT COMPRISING A CONJUGATED DIACETYLENE LAYER ON THE PHOTOPOLYMER LAYER

Mong-Jon Jun; Klaus Penzien, both of Ludwigshafen, and Gerhard Wegner, Ingelheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Sept. 20, 1972, Ser. No. 290,709
Int. Cl. G03c *1/76, 3/00*
U.S. Cl. 96—69 **8 Claims**

Photopolymer printing plates having, on top of a photosensitive layer (*a*) attached to a base, a thin layer (*b*) of a suspension of finely crystalline conjugated diacetylene compounds in a binder, which compounds change color when photopolymerized. Such printing plates make possible the production of positive copies of a positive transparency by producing in layer (*b*) an image with areas which do not transmit light by exposure to light having a wavelength of less than 320 mμ and optional fixing, and initiating photopolymerization in layer (*a*) by exposing it through the said image to light having a wavelength of from 320 to 450 mμ and then washing out the unexposed areas of layer (*a*).

3,836,369

DIAZO PHOTOSENSITIVE COMPOSITION

Catharine E. Looney; Rudolph H. Michel, both of Wilmington, Del., and Ronald A. Sahatjian, Watertown, Mass., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 5, 1972, Ser. No. 286,132
Int. Cl. G03c *1/54, 1/58, 1/60*
U.S. Cl. 96—91 R **3 Claims**

Acid-stabilized, light sensitive azo dye-forming compositions comprising a mixture of at least one light sensitive diazonium salts from each of a fast group and a slow group and a mixture of coupler components from each of two groups. These compositions are capable of producing low-contrast images over a wide latitude and are especially useful for electronic video recording systems.

3,836,370

MEROCYANINIC DYES AND THEIR USE IN SILVER HALIDES PHOTOGRAPHIC EMULSIONS CONTAINING THE SAME

Paolo Beretta, Ferrania, and Luigi Magnani, Carcare, both of Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 8, 1972, Ser. No. 232,724
Claims priority, application Italy, Mar. 9, 1971, 48919/71
Int. Cl. G03c *1/10*
U.S. Cl. 96—127 **5 Claims**

Merocyanine dyes comprising a heterocyclic nitrogenous nucleus and a heterocyclic ketomethylene nucleus, and silver halide emulsions containing such dyes.

3,836,371

POLISH INGREDIENT

John G. Kokoszka, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Feb. 7, 1973, Ser. No. 330,375
Int. Cl. C08h *9/06;* **C09a** *1/08*
U.S. Cl. 106—10 **8 Claims**

There is claimed a mixture consisting essentially of (1) 45 to 99.5 percent by weight of a hydroxyl endblocked polydimethylsiloxane having a viscosity in the range of 10 to 15,000 cs. at 25°C., (2) 0.3 to 35 percent by weight of a silane having the formula $(RO)_3SiR'NHR''$ or $(RO)_3SiR'NHCH_2CH_2NH_2$ wherein R is an alkyl radical containing from one to four carbon atoms, R' is a divalent hydrocarbon radical free of aliphatic unsaturation and contains from three to four carbon atoms, and R'' is a hydrogen atom or a methyl radical, and (3) 0.2 to 25 percent by weight of a silane having the general formula X_3SiZ wherein X is an alkoxy or acyloxy radical containing from one to four carbon atoms and Z is a nonhydrolyzable hydrocarbon or halohydrocarbon radical or a nonhydrolyzable radical composed of carbon, hydrogen and oxygen atoms wherein the oxygen atoms are present in hydroxyl groups, ester groups or ether linkages, there being from one to 10 carbon atoms in the Z radical. This composition is incorporated in polishes, particularly wax containing polishes such as furniture and floor polishes, whereby detergent resistance and easy rub-out are obtained.

3,836,372

METHODS AND MATERIALS FOR TREATING INVESTMENT CASTING PATTERNS

Robert A. Horton, Chesterland, Ohio, assignor to Precision Metalsmith, Inc., Cleveland, Ohio

Filed May 15, 1972, Ser. No. 253,177
Int. Cl. B28b *7/36*
U.S. Cl. 106—38.22 **15 Claims**

Investment casting patterns are treated with a liquid mixture consisting essentially of an aqueous dispersion of colloidal refractory particles and a medium comprising a watersoluble organic liquid in order to render the pattern surfaces hydrophilic and thereby promote uniform surface coverage by water-base refractory slurries used in the production of ceramic shell molds and bulk investment molds.

3,836,373

METHOD OF PREPARING PORCELAIN ENAMEL FRIT FOR DRY PROCESS ENAMELING

Alfred S. Ault, River Forest; Le Roy A. Johnson, Evanston, and Harry J. Van Dolah, Wheaton, all of Ill., assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Filed Feb. 2, 1961, Ser. No. 86,570
Int. Cl. C03c *5/02, 3/22*
U.S. Cl. 106—48 **17 Claims**

1. The method of making an improved titania opacified porcelain enameling frit for dry process application which comprises fritting a molten silicate glass composition containing from about 8 to 24 percent titanium dioxide and thereafter heat treating the frit particles at a temperature of at least 100°F above the interferometer softening point but below the point at which said frit particles become tacky until nucleation of titanium dioxide occurs in the frit particles but before relatively large crystals are formed in said frit particles.

5. A porcelain enamel frit for dry process application comprising a matrix of acid resistant silicate glass containing from about 8 to 24 percent titanium dioxide, said glass having nuclei consisting essentially of titania distributed therethrough, said nuclei being very substantially smaller than the titanium dioxide crystals existing in a titanium dioxide opacified enamel produced by dry process enameling.

3,836,374

HOT PRESSED SILICON NITRIDE

David W. Richerson, Auburn, and Malcolm E. Washburn, Princeton, both of Mass., assignors to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 219,369, Jan. 20, 1972, abandoned. This application Dec. 26, 1972, Ser. No. 318,474
Int. Cl. C04b *35/58*
U.S. Cl. 106—55 **9 Claims**

A hot pressed silicon nitride product is described, the product having high strength at room temperature as well as high strength at elevated temperature. The product has a flexural strength in excess of 100,000 psi at 20°C., in excess of 90,000 psi at 1,200°C., in excess of 35,000 psi at 1,375°C, and preferably above 45,000 psi at 1,375°C. A preferred form of

the product includes between .25 and 2.0 mg in the form of complex silicate, which silicate also contains a limited amount of iron, aluminum and calcium. The complex silicate has a liquidus above 1,400°C. The product has a density between 3.1 and 3.3 g/cc, the total oxygen content of the product being less than 5%.

3,836,375
$TiO_2-P_2O_5-Na_2O-WO_3$ OPTICAL GLASSES AND METHOD

Heinz Broemer, Hermannstein; Werner Huber, Steindorf; Norbert Meinert, and Johann Spincic, both of Wetzlar, all of Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany

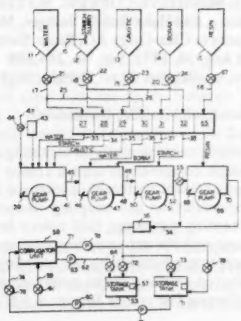
Filed Mar. 26, 1973, Ser. No. 344,578
Int. Cl. C03c *3/16, 3/30*
U.S. Cl. 106—47 Q **10 Claims**

Optical glasses of a high index of refraction n_e between 1.74 and 1.90, a high dispersion ν_e between 25 and 17, and a high positive anomalous partial dispersion are prepared. The essential components of the melt mixture are phosphorus compounds, sodium oxide, titanium dioxide, and tungsten oxide. If desired, said essential components have admixed thereto other glass-forming oxides and phosphates.

3,836,376
STARCH-BASED ADHESIVE COMPOSITIONS

Richard J. Hampton, Pierrefonds, and Brian P. Bonnell, Greenfield Park, Quebec, both of Canada, assignors to The Ogilvie Flour Mills Company, Limited, Montreal, Quebec, Canada

Continuation of Ser. No. 62,792, Aug. 11, 1970, abandoned.
This application Dec. 4, 1972, Ser. No. 311,544
Int. Cl. C08b *25/02, 17/22*
U.S. Cl. 106—213 **5 Claims**



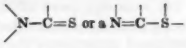
A process for preparing and continuously delivering a finished starch-based adhesive composition, containing a gelatinized starch portion and a raw starch protein, to a site of use, such as a corrugating machine. The process includes continuously delivering formula components, including raw starch slurry, water and caustic, to an adjustable metering device by which means the volume of each component is precisely controlled to attain relative proportions of such components corresponding to a desired formula. Controlled volumes of raw starch slurry, water and caustic are delivered to a first mixing zone wherein the ingredients are heated to produce a gelatinized starch mass of relatively stable viscosity. The gelatinized mass is passed to a second mixing zone. A further volume of water is simultaneously forwarded to the second mixing zone. The gelatinized starch and water in the second mixing zone is blended to form a gelatinized starch medium. The gelatinized starch medium is passed from the second mixing to a third mixing zone. Simultaneously, a further volume of raw starch slurry is forwarded to the third mixing zone. The raw starch slurry is commingled with the gelatinized medium so as to intimately combine the two starch fractions - the gelatinized starch becomes a carrier to hold raw starch slurry in suspension thereby forming the finished starch-based adhesive composition. The finished starch-based adhesive is delivered to a container for temporary storage. When necessary there is further adjusting of the volumes through the metering device of one or more of the adhesive components relative to the other volumes thereby altering prior to use the relative proportions in the finished starch-based adhesive composition, to produce a correct formula. The finished starch-based adhesive composition is passed from the container to the site of use.

3,836,377
CYANOACRYLATE ADHESIVE COMPOSITION

John J. Delahunty, 18 Chalfont Estate, Texas Ln., Malahide Co., Dublin, Ireland

Filed Dec. 7, 1972, Ser. No. 313,061
Claims priority, application Ireland, Dec. 14, 1971, 1584/71
Int. Cl. C08f *3/42*
U.S. Cl. 106—287 **12 Claims**

This invention concerns polymerization accelerators or surface activators for increasing the rate of cure of cyanoacrylate adhesive compositions. The active ingredients of the activators are organic compounds containing a



group.

3,836,378
PRODUCTION OF COMPOSITE PIGMENTS OF IRON OXIDE AND CARBON BLACK

Volker Hahnkamm; Jakob Rademachers; Hanno Henkel; Karl Brandle, and Kurt Schafer, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 1, 1973, Ser. No. 356,271
Claims priority, application Germany, May 12, 1972, 2223129
Int. Cl. C08h *17/02*
U.S. Cl. 106—288 R **9 Claims**

A process for producing a composite pigment comprising iron oxide and carbon black, comprising introducing into a reaction zone at a temperature of about 450° to 850°C hot gas laden with carbon black, a suspension of iron oxide or hydroxide and a material which binds carbon to iron oxide under the conditions in the reactor. The iron oxide or hydroxide source is preferably a waste sludge and the binder is preferably an organic material such as molasses, tar pitch, sulfite waste liquor and fish glue or an inorganic material such as waterglass or SiO_2 hydrosol. An oxidizing after-treatment renders the pigment hydrophilic.

3,836,379
QUINACRIDONE PIGMENT MIXTURES AND PROCESS FOR PREPARING THEM

Aloys Kirsch; Otto Fuchs, both of Frankfurt/Main, and Ernst Spietschka, Oberauroff, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

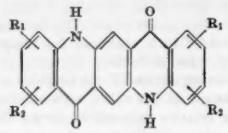
Filed Sept. 28, 1972, Ser. No. 293,135

Claims priority, application Germany, Sept. 30, 1971, 2148866

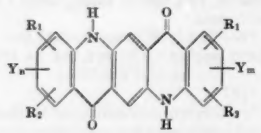
Int. Cl. C08h *17/14*

U.S. Cl. 106—288 Q **9 Claims**

Quinacridone mixtures consisting of 85 to 99.5 percent by weight of one or several linear trans-quinacridones of the general formula



wherein R_1 and R_2 are identical or different and represent a hydrogen or halogen atom, an alkyl or alkoxy group having each 1 to 4 carbon atoms, an aryloxy, aryl, carbonamide or N-alkyl carbonamide group or which represent together the radical of an aromatic or heterocyclic ring, and 0.5 to 15 percent by weight of one or several linear trans-quinacridones of the general formula



wherein Y represents a straight-chained or branched alkyl or alkoxy radical having 6 to 18 carbon atoms, *m* and *n* are integers of from 0 to 1 and the sum of *n* and *m* being 1 or 2 and R_1 and R_2 having the meanings given above. These mixtures are obtained by mixing with one another starting compound or final products substituted accordingly during the process of preparation or formation and processing in the manner usual for quinacridones. As compared to the single components the mixture thereof is more transparent and has a better color intensity, a better dispersability and fluidity of the lacquers colored with them and frequently more brilliant shades.

3,836,380
DUAL COATING FOR PROTECTING METAL SURFACE DURING HEAT TREATMENT

David W. Kramer, Glendale, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Sept. 21, 1972, Ser. No. 290,806

Int. Cl. C21d *1/68*; **B44d** *1/14*

U.S. Cl. 117—6 **12 Claims**

A temporary vitreous protective coating composition for metal to protect the metal against oxidation and decarburization at temperatures in the range of 1100°F to 2350°F. The coating composition includes a glass frit ground coat which is applied to the metal base and has a sintering temperature in the range of 1600°F to 2000°F. A glass frit cover coat is applied over the ground coat and has a sintering temperature in the range of 1050°F to 1300°F. During heat treatment of the metal base, the cover coat will initially sinter to provide an impervious outer coating, and on continued heating, the inner ground coat will sinter to provide a complete impervious barrier to protect the metal against oxidation and decarburization at the heat treating temperature. On cooling, the coating composition will spall away from the metal so that it can be removed for subsequent processing of the metal base.

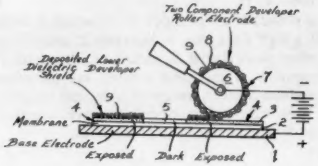
3,836,381
A METHOD OF DEVELOPING A DIELECTRIC PATTERN ON A SEMICONDUCTOR SURFACE USING A TWO-COMPONENT DEVELOPER

Kenneth A. Metcalfe, Lockleys; Alwin S. Clements, Largs Bay, and Clive W. Wilson, Oaklands Park, all of Australia, assignors to The Commonwealth of Australia care of The Secretary, Department of Supply, Parkes, Canberra, Australia

Filed Oct. 2, 1972, Ser. No. 294,001

Int. Cl. G03g *13/08*, *13/10*

U.S. Cl. 117—17.5 **13 Claims**



A method of developing a dielectric pattern on a semiconductor surface by using a two-component developer, each selective to a different polarity, comprising applying an electrical bias through the surface to deposit on the high dielectric areas of the pattern, a developer component which has a lower dielectric constant than the semiconductive surface to form a relatively insulating shield at the deposition areas. Then the bias polarity is reversed to deposit the other developer component on the unshielded areas, due to the higher dielectric constant at the unshielded area.

3,836,382
PRESSURE-SENSITIVE COPYING MATERIAL

Robert Garner, Bury, and Hans Rudolf Bolliger, Mere, both of England, assignors to Ciba-Geigy AG, Basle, Switzerland

Filed Aug. 30, 1972, Ser. No. 284,808

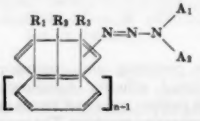
Claims priority, application Great Britain, Sept. 21, 1971, 439/71

Int. Cl. B41c *1/06*; **B41m** *5/00*

U.S. Cl. 117—36.2 **15 Claims**

A pressure-sensitive copying material including at least one pair of sheets, which comprises at least a colour former dissolved in an organic solvent preferably contained in pressure-rupturable microcapsules, an azo coupling component and a solid electron accepting substance, said colour former, upon coming into contact with the azo coupling component and the solid electron accepting substance by azo coupling being able to produce a coloured marking at the points where the pressure is applied, wherein the colour former is a triazen of the formula

(I)



in which R_1, R_2 and R_3 each is hydrogen, alkyl, substituted alkyl, alkoxy, halogen. nitro, acylamino, aminoacyl or alkoxy-

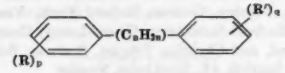
carbonyl, A_1 and A_2 each is alkyl or phenyl or A_1 and A_2 together with the nitrogen atom form a heterocyclic ring system and n is 1 or 2.

3,836,383
PRESSURE SENSITIVE RECORDING PAPER

Masataka Kiritani; Hiroharu Matsukawa, both of Shizuoka, and Masayuki Aoki, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 27, 1971, Ser. No. 193,151
Claims priority, application Japan, Oct. 27, 1970, 45-94877
Int. Cl. B41c *1/06*
U.S. Cl. 117—36.2 **7 Claims**

A pressure-sensitive recording paper comprising a support having coated thereon a layer of color former, said color former dissolved in at least one compound represented by the following formula:



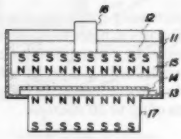
(I)

wherein n is an integer of 1 to 8, R and R′ each represent a member selected from the group consisting of alkyl groups containing one to eight carbon atoms, and a hydrogen atom, p and q represent the number of alkyl groups, $p+q$ being an integer of 1 to 3, and R and R′ may be the same.

3,836,384
IMAGING SYSTEMS

Yasuo Tamai, Asaka, Japan, assignor to Fuji Photo Film Company, Ltd., Tokyo, Japan

Filed Sept. 26, 1969, Ser. No. 20,265
Claims priority, application Japan, Oct. 1, 1968, 43-71385
Int. Cl. G03g *13/10, 15/10*
U.S. Cl. 117—37 LE **21 Claims**



An electrostatographic imaging system of the liquid development type with the space between the development electrode and the imaging surface being maintained substantially constant during development by the repulsive forces of magnetism.

3,836,385
CYCLIC SULFONIUM ZWITTERION-TITANIUM CATALYSTS FOR ALUMINUM PLATING PROCESS

Donald L. Schmidt, and Charles B. Roberts, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 2, 1972, Ser. No. 222,984
Int. Cl. C23e *3/00*
U.S. Cl. 117—47 R **18 Claims**

An improved process for the application of a decomposition catalytic compound to a substrate, in air, prior to electrolessly aluminum plating the substrate by decomposing an aluminum hydride. A cyclic sulfonium zwitterion, a decomposition catalyst and a mutual solvent therefore are admixed; applied to a substrate and polymerized prior to application of the aluminum plate.

3,836,386
COATING OF GLASSWARE TO IMPROVE ITS ABRASION RESISTANCE

Gerald L. Roy, Lancaster, Pa., assignor to Kerr Glass Manufacturing Corporation, Los Angeles, Calif.

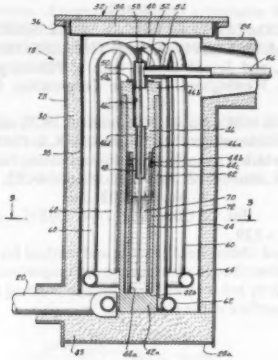
Continuation-in-part of Ser. No. 15,947, March 2, 1970, abandoned. This application Dec. 28, 1971, Ser. No. 213,155
Int. Cl. B32b *17/06;* **C03c** *17/22, 17/32*
U.S. Cl. 117—72 **12 Claims**

Glassware is rendered abrasion resistant by applying a first coating of a metal oxide to the glassware followed by a coating of an ionomeric copolymer.

3,836,387
METHOD OF VAPORIZING METAL

John M. Roblin, Cleveland; Frank J. Cole, Parma, and William A. Reed, Richfield, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Division of Ser. No. 590,921, Oct. 31, 1966, Pat. No. 3,672,327. This application Dec. 29, 1971, Ser. No. 213,764
Int. Cl. C23c *13/02*
U.S. Cl. 117—102 A **4 Claims**



A method of vaporizing metal which comprises the steps of forming a thin shell of molten metal the metal of which is above and communicated with a supply of molten metal, heating said thin shell of molten metal to vaporize said metal, and withdrawing the vapor from the shell and transporting the vapor to a point at which the vapor will impinge upon a substrate, by means of path which removes any molten metal particles from the metal vapor.

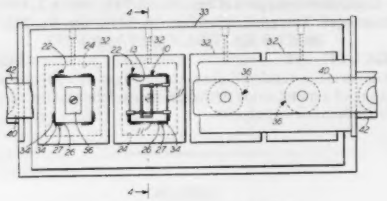
3,836,388
DISTRIBUTING A FLUID EVENLY OVER THE SURFACE OF AN ARTICLE

William H. Fowler, Bethlehem, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 18, 1972, Ser. No. 298,698
Int. Cl. B05c *7/02*
U.S. Cl. 117—120 **11 Claims**

In a method and apparatus for distributing silicone rubber over the surface of a substrate to encapsulate it, a precise quantity of fluid rubber is deposited by the apparatus at the center of the surface. The substrate is surrounded by orifices through which air is blown vertically upward past its edges. The upward movement of the air past the substrate draws the

rubber from the center to the edges to completely coat the substrate and blow back any rubber that tends to run over.



The orifices are larger at the corners to increase the flow of rubber thereto. The coated substrate is placed in a vacuum chamber to remove any trapped air or gases.

3,836,389

GLASS COATED ELECTRICAL STEEL SHEET AND ARTICLES PREPARED THEREFROM

Karl Foster, and Joseph Seidel, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 46,152, June 15, 1970, abandoned, which is a division of Ser. No. 576,963, Sept. 2, 1966, Pat. No. 3,528,863, which is a continuation-in-part of Ser. No. 556,337, June 9, 1966, abandoned. This application Mar. 22, 1972, Ser. No. 237,202

Int. Cl. C03c *7/02, 7/04, 3/08*

U.S. Cl. 117—129 **2 Claims**

An oriented silicon steel product and method for producing the same is described in which improved magnetostriction and strain sensitivity are obtained by means of bonding a thin glass layer to the surface of the steel.

3,836,390

TREATMENT OF FIBRES

Albert John Barber, Sale; Derek James Rowland Massey, Linton, both of England; James McCartney, Banbridge, Northern Ireland, and Kenneth Winterbottom, Whittlesford, England, assignors to Ciba-Geigy AG, Basle, Switzerland

Filed Apr. 12, 1972, Ser. No. 243,470

Claims priority, application Great Britain, Apr. 19, 1971, 9765/71

Int. Cl. D06m *15/48, 15/08*

U.S. Cl. 117—138.8 A **10 Claims**

Synthetic textile materials, such as polyamides, polyesters, polyacrylonitrile, polyvinyl alcohol, and cellulose triacetate, are treated with an ester containing on average, at least two mercaptan groups per molecule, which is then cured, in order to impart a better handle and improved antisoil properties.

Typically, the ester is prepared by the reaction of

a. a compound containing at least two carboxylic acid groups

b. a compound containing at least two alcoholic hydroxyl groups and, optionally,

c. a compound containing not more than one carboxylic acid group or alcoholic hydroxyl group, especially a monomercaptomonocarboxylic acid or a monomercaptomonohydric alcohol.

3,836,391

PROCESS FOR IMPROVING THE ANTISLIP PROPERTIES OF A CELLULOSIC SURFACE

Charles C. Payne, Chicago, and Peter H. Vossos, Lisle, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Division of Ser. No. 111,627, Feb. 1, 1971, Pat. No. 3,711,416. This application Aug. 25, 1972, Ser. No. 283,837

Int. Cl. D21h *1/10*

U.S. Cl. 117—152 **4 Claims**

The antislip properties of a cellulosic surface are improved by applying thereto a coating of a composition containing an aqueous colloidal anionic silica sol and a non-gelling flocculating agent.

3,836,392

PROCESS FOR INCREASING THE RESISTANCE TO WEAR OF THE SURFACE OF HARD METAL CEMENTED CARBIDE PARTS SUBJECT TO WEAR

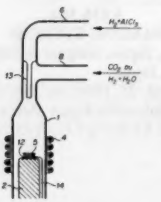
Benno Lux, Veyrier, Geneva; Roland Funk, Vandoeuvres, Geneva; Herbert Schachner, Grand-Lancy, Geneva, all of Switzerland, and Christian Triquet, Rosieres, Belgium, assignors to Sandvik AB, Stockholm, Sweden

Filed July 5, 1972, Ser. No. 269,242

Claims priority, application Switzerland, July 7, 1971, 9943/71

Int. Cl. C23c *11/08*

U.S. Cl. 117—169 R **3 Claims**



A process for increasing the resistance to wear of the surface of hard metal parts subject to wear, such as the cutting blade of cutting tools, by coating the surface of the hard cemented carbide articles with a layer of refractory oxide such as aluminium oxide, ziroconium oxide or stabilized zirconium oxide in a thickness of up to 20 microns.

3,836,393

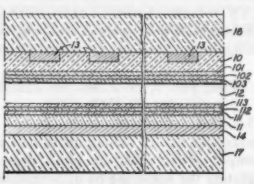
PROCESS FOR APPLYING STRESS-BALANCED COATING COMPOSITE TO DIELECTRIC SURFACE OF GAS DISCHARGE DEVICE

Roger E. Ernsthausen, Luckey, and Brooke R. Emch, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed July 14, 1971, Ser. No. 162,638

Int. Cl. B44d *1/18, 1/16*

U.S. Cl. 117—217 **39 Claims**



There is disclosed a process for applying a stress-balanced coating composite to each dielectric surface of a multiple

gaseous discharge display/memory panel having an electrical memory and capable of producing a visual display, the panel being characterized by an ionizable gaseous medium in a gas chamber formed by a pair of opposed dielectric material charge storage members, each of which is respectively backed by an array of electrodes, the electrodes behind each dielectric material member being oriented with respect to the electrodes behind the opposing dielectric material member so as to define a plurality of discrete discharge volumes constituting a discharge unit.

The surface of each dielectric material charge storage member is selectively coated with a first layer of at least one compound of Group IIA, Al, Si, Ti, Zr, Hf, or mixtures thereof; a second layer of at least one compound of Group IIA, Al, Si, Ti, Zr, Hf, or mixtures thereof which is chemically different from the first layer; and a third layer of an electron-emissive material; the combination of the first and second layers being sufficient to prevent ion migration from the dielectric to the third layer and sufficient to provide a thermally and structurally stable base for the third layer; and the second layer being chemically inert relative to the third layer.

3,836,394

METHOD OF MANUFACTURE OF A CONDUCTOR RAIL

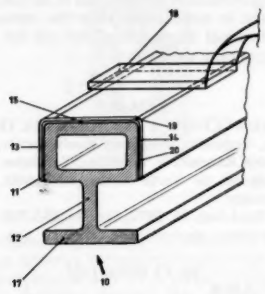
Tibor Kugler, Thayngen, and Hans Wolfhart Rieger, Beringen, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed July 27, 1972, Ser. No. 275,517

Claims priority, application Switzerland, July 29, 1971, 11216/71

Int. Cl. B44d *1/16, 1/18*

U.S. Cl. 117—217 **8 Claims**



There is concerned a method of manufacture of a conductor rail comprising an aluminum body and a layer of more resistant for instance ferrous material attached thereto, whereby said layer is applied in liquid form suppressing an intermetallic layer of poor conducting properties usually obtained when uniting aluminum with ferrous and like materials.

3,836,395

MANUFACTURE OF MAGNETIC RECORDING MEDIA

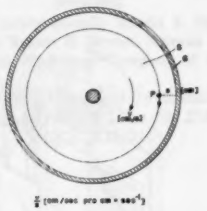
Herman Roller; Heinz Stritzinger; Job-Werner Hartmann, all of Ludwigshafen; Roland Falk, and Werner Balz, both of Willstaett, all of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Apr. 19, 1972, Ser. No. 245,471

Int. Cl. H01f *10/02*

U.S. Cl. 117—238 **1 Claim**

A process for the manufacture of magnetic recording media exhibiting good orientation of the magnetic particles by coating a base with a viscous liquid dispersion of magnetic pigment, orienting the applied magnetizable particles by means of a magnetic field and drying the applied magnetic pigment dispersion. According to the invention, the magnetic pigment



dispersion is subjected, immediately prior to the coating operation, to shear at a specific minimum shear rate gradient.

3,836,396

SUGAR COMPOSITION

Thomas F. McNamara, N. Caldwell, and Timothy P. Perper, New Brunswick, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 13, 1972, Ser. No. 243,876

Int. Cl. C13f *3/00*

U.S. Cl. 127—30 **6 Claims**

Compositions of sugars suitable as substitutes for table sugar. The compositions, sucrose and fructose; sucrose and maltose; and sucrose, fructose and maltose are less cariogenic than table sugar alone.

3,836,397

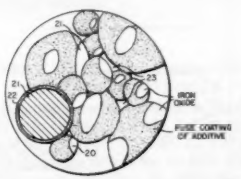
IRON ELECTRODE FOR ALKALINE CELLS

Carl C. Hardman, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 31, 1972, Ser. No. 276,486

Int. Cl. H01m *43/04*

U.S. Cl. 136—25 **5 Claims**



A battery is made containing at least one positive and one negative electrode plate with electrolyte contacting the plates, the negative electrode plate containing an active material comprising about 60–80 weight percent iron particles over about 5 microns diameter and about 20–40 weight percent iron particles up to about 2 microns diameter, the iron particles having a fused coating of sulfur, selenium or tellurium.

3,836,398

ELECTROCHEMICAL GENERATORS OF THE METAL-AIR OR METAL-OXYGEN TYPE

Maurice Garcin, Paris, and Adrien Gauthier, Saint-Ouen, both of France, assignors to Societe Les Piles Wonder, Saint-Ouen, France

Filed Feb. 23, 1972, Ser. No. 228,618

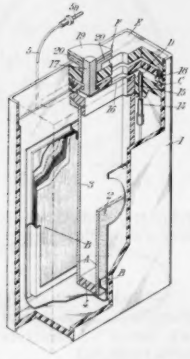
Claims priority, application France, Feb. 25, 1971, 71.06444

Int. Cl. H01m *29/02, 29/04*

U.S. Cl. 136—86 A **3 Claims**

The generator comprises in combination a container in which are housed a gaseous double diffusion electrode con-

stituting a first assembly with an obturator which carries and closes said container and an anode-dry electrolyte assembly, removable and replaceable independently of the first as-



sembly. The anode-dry electrolyte assembly is U-shaped and is arranged in the container on both sides of the gaseous double diffusion electrode.

3,836,399

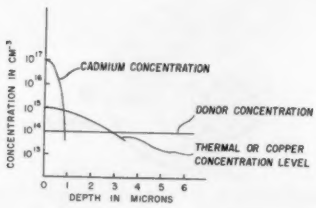
PHOTOVOLTAIC DIODE WITH FIRST IMPURITY OF CU AND SECOND OF CD, ZN, OR HG

George R. Pruett, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 10,084, Feb. 16, 1970, abandoned, which is a continuation of Ser. No. 370,145, May 14, 1964, abandoned. This application Mar. 26, 1971, Ser. No. 156,692

Int. Cl. H01l *15/02*

U.S. Cl. 136—89 **7 Claims**



A photodiode is disclosed which may be made by diffusing into N-type indium-antimonide a fast diffusing dopant impurity; such as copper; in a low concentration; e.g., below 5×10^{15} atoms per cubic centimeter; at the high conductivity surface; and a slowly diffusing dopant impurity; such as zinc, cadmium, or mercury; in a high concentration; e.g., 5×10^{17} atoms per cubic centimeter; at the high conductivity surface to form (a) a first region of uniform N-type conductivity indium-antimonide, (b) a second, or copper-diffused P-type conductivity, region contiguous with the N-type indium-antimonide and forming a P-N Junction therewith and decreasing in concentration and conductivity toward the P-N junction, (c) a third, high conductivity, region containing both the slowly diffusing zinc, cadmium, or mercury, and the copper, spaced from the P-N junction, contiguous with the high conductivity portion of the copper-diffused region, being substantially thinner than the copper-diffused region, and being of P-type conductivity. Ohmic contacts are affixed to the first region and the third region.

3,836,400

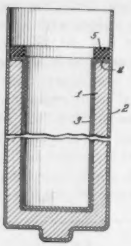
DRY BATTERY SEAL AND TERMINAL CONNECTION

Howard J. Strauss, Bloomington, Minn., and Edward S. Hill, Wickliffe, Ohio, assignors to Gould Inc., Mendota Heights, Minn.

Filed Sept. 1, 1971, Ser. No. 176,940

Int. Cl. H01m *1/02*

U.S. Cl. 136—133 **4 Claims**



In a cylindrical dry cell, the cathode body comprising depolarizing material and electrolyte is completely isolated from the anode compartment by a sealing gasket which engages a generally washer-shaped subseal which fits snugly in the cylindrical can and holds down the end portion of the paper separator which covers the cathode. The subseal also serves to prevent creepage of alkaline electrolyte solution to the cell sealing surfaces at the open end of the can. The gasket may also serve to continuously press the current collector against the terminal diaphragm of the cell for dependable electrical engagement therewith.

3,836,401

LEAD ACCUMULATOR CONSTRUCTION

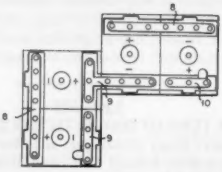
Hans Niklas, Eppstein; Wolfgang Knabenbauer, Kelkheim, and Heinrich Rabenstein, Frankfurt-Zeilsheim, all of Germany, assignors to Varta Aktiengesellschaft, Frankfurt-Main, Germany

Filed Aug. 25, 1972, Ser. No. 283,709

Claims priority, application Germany, Aug. 26, 1971, 2142768

Int. Cl. H01m *1/02*

U.S. Cl. 136—134 R **8 Claims**



A lead accumulator or battery consists of a plurality of cells each having positive and negative plates. A cover provided for each of the cells has openings therein and cell connectors electrically and mechanically interconnect the cells. The cell connectors are disposed below the upper edge of the cell covers and provide a rigid interconnection between the cells. The disposition of the cell connectors below the upper edge of the cell cover protects against inadvertent short circuiting caused by contact with metal objects.

3,836,402

MOLYBDENUM-RUTHENIUM THERMOCOUPLE FOR TEMPERATURE MEASUREMENTS UNDER NUCLEAR REACTION CONDITIONS

Edward D. Zysk, Livingston; Allen R. Robertson, Edison, and Michael Cisz, Irvington, Robert W. Sheridan, Glen Rock, all of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.
Minerals & Chemicals Corporation, Murray Hill, N.J.

Filed Aug. 28, 1972, Ser. No. 283,953
Int. Cl. H01v 1/22
U.S. Cl. 136—202 1 Claim

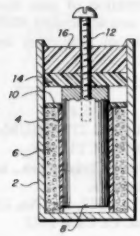
A thermocouple suitable for use under high temperature conditions in nuclear reactors and other environments where neutron irradiation exists, one element of the thermocouple being composed essentially of molybdenum and the other element essentially of ruthenium.

3,836,403

LITHIUM BATTERIES AND METHOD OF PREPARING A POSITIVE ELECTRODE MATERIAL THEREFOR

Lewis H. Gaines, Framingham, Mass., assignor to Tyco Laboratories, Inc., Waltham, Mass.

Filed Apr. 1, 1971, Ser. No. 130,277
Int. Cl. H01m 17/02
U.S. Cl. 136—83 R 14 Claims



Method of providing an improved positive electrode material for lithium batteries comprising heating Ni_3S_2 in air or oxygen at a temperature and for a period of time such as to produce an oxidation product that exhibits a discharge behavior substantially better than that of Ni_3S_2 when ionically coupled to lithium by a non-aqueous electrolyte.

3,836,404

METHOD OF FABRICATING COMPOSITE SUPERCONDUCTIVE ELECTRICAL CONDUCTORS

Bruce P. Strauss, Downers Grove, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed June 28, 1972, Ser. No. 266,901
Int. Cl. H01v 11/14
U.S. Cl. 148—11.5 R 1 Claim

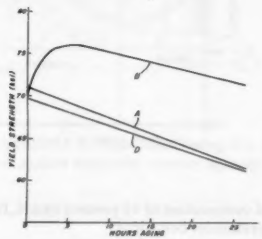
A method of fabricating composite superconductive electrical conductors by disposing at least one rod of flexible substrate material into a billet of an alloy of a normal metal and an alloying metal, co-drawing the billet and rod down to form an elongated conductor and heating the conductor to diffuse the alloying metal into the surface of the flexible substrate, forming a layer of superconductive material in the flexible substrate surrounded by a sheath of normal metal alloy. By this method, composite conductors containing any number of superconductive filaments can be fabricated.

3,836,405

ALUMINUM ALLOY PRODUCT AND METHOD OF MAKING

James T. Staley, Lower Burrell; Harold Y. Hunsicker, New Kensington, and Robert H. Brown, Natrona Heights, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 60,343, Aug. 3, 1970, abandoned. This application July 20, 1972, Ser. No. 273,842
Int. Cl. C22f 1/04
U.S. Cl. 148—12.7 6 Claims



An aluminum base alloy containing zinc, copper and magnesium together with manganese and with specially controlled composition limits exhibits very high strength when thermally treated to a condition having high resistance to stress corrosion cracking. Improved products of the alloy also exhibit low quench sensitivity and, accordingly, high strength even in very thick sections. A special aging treatment produces the optimum combination of strength and resistance to stress corrosion cracking properties.

This invention relates to improved wrought products and to a method of their production.

3,836,406

PERMANENT MAGNETIC Fe-Mn-CrY ALLOY CONTAINING NITROGEN

Renpei Yoda, Kawasaki, Japan, assignor to The Director of National Research Institute for Metals, Tokyo, Japan

Continuation of Ser. No. 325,305, Jan. 22, 1973, abandoned, which is a continuation of Ser. No. 60,858, Aug. 7, 1970, abandoned. This application Dec. 21, 1973, Ser. No. 427,361
Int. Cl. H01f 1/04
U.S. Cl. 148—31.57 1 Claim

A permanent magnetic alloy consists essentially of 0.05 – 0.5 wt. percent N, 5– 15 wt. percent Mn, 2– 12 wt. percent Cr, and remainder iron, produced by solution treatment at a temperature not lower than 900°C, cold rolling to a thickness reduction of 10– 98 percent and if desired, aging at 100° – 800°C.

The alloy may additionally contain Mo, Co, Al, C, Nb, Ti, Zr and V.

3,836,407

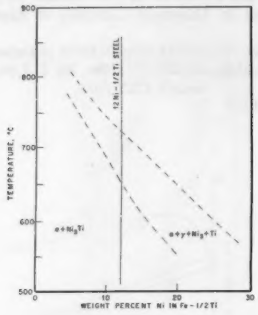
HIGH STRENGTH AND HIGH TOUGHNESS ALLOY

Earl R. Parker, El Cerrito, and Victor F. Zackey, Berkeley, both of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 2, 1972, Ser. No. 249,585
Int. Cl. C22c 41/02, 39/40
U.S. Cl. 148—142 3 Claims

A structural steel which possesses both high strength and high toughness and has particular application for cryogenic uses. The steel is produced by the utilization of thermally in-

duced phase transformation following heating in a three-phase field in iron-rich alloys of the Fe-Ni-Ti system, with a



preferred composition of 12 percent nickel, 0.5 percent titanium, the remainder being iron.

3,836,408

PRODUCTION OF EPITAXIAL FILMS OF SEMICONDUCTOR COMPOUND MATERIAL

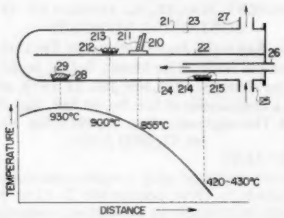
Hiroyuki Kasano, Akishima, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 21, 1971, Ser. No. 210,418

Claims priority, application Japan, Dec. 21, 1970, 45-114171; July 19, 1971, 46-53077

Int. Cl. H01l *7/36;* **C23c** *11/00;* **H01l** *3/00*

U.S. Cl. 148—175 **6 Claims**



A method of epitaxially growing, preferably, a III – V compound semiconductor onto a substrate by forming a gaseous stream of (1) a gaseous mixture formed by a reaction of hydrogen halide (or water vapor) and a group III element and (2) at least one group V element; disposing a III – V compound semiconductor or a constituting element of a III – V compound semiconductor in a region held at a high temperature upstream of the substrate; reacting the gaseous stream, particularly unreacted hydrogen halide (or unreacted water vapor) with the disposed material and passing the thus reacted gaseous stream into contact with the substrate to deposite the III – V compound semiconductor on its surface. The substrate is maintained at a lower temperature than the disposed material. This process is similarly applied to mixed crystals as well as compound semiconductor layers of other groups.

3,836,409

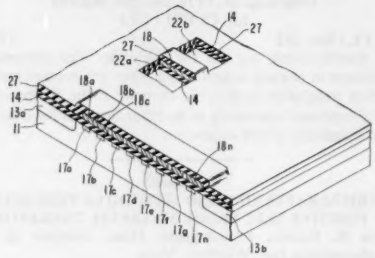
UNIPLANAR CCD STRUCTURE AND METHOD

Gilbert F. Amelio, Saratoga, and Phillip J. Salsbury, Sunnyvale, both of Calif., assignors to Fairchild Camera and Instrument Coporation, Mountain View, Calif.

Filed Dec. 7, 1972, Ser. No. 313,011

Int. Cl. H01l *7/44*

U.S. Cl. 148—187 **13 Claims**



A CCD structure is made by forming an insulating layer over semiconductor material, forming a substantially uniform layer of polycrystalline semiconductor material over the insulating layer, and then using the polycrystalline semiconductor material during the formation of gate electrodes associated with the CCD structure and associated MOS readout circuitry to prevent the diffusion of impurities into the underlying semiconductor material.

3,836,410

METHOD OF TREATING TITANIUM-CONTAINING STRUCTURES

Donald W. DuBois, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 31, 1972, Ser. No. 239,991

Int. Cl. C23f *1/02*

U.S. Cl. 156—3 **12 Claims**

A method is disclosed for the removal of metallic iron inclusions from the surfaces of chemical process equipment, particularly electrolytic cells, prepared from titanium. This method involves the treating of titanium alloy surface with an acid solution to remove metallic iron inclusions from those surfaces of the titanium that are subject to attack by halides.

3,836,411

METHOD FOR FORMING WAX ORNAMENTS ON A WIRE SCREEN

Lorna A. Torplund, 728 Cherry Ave., Apt. 6, Long Beach, Calif. 90813

Filed Feb. 28, 1973, Ser. No. 336,427

Int. Cl. B44c *1/18;* **B32b** *1/10*

U.S. Cl. 156—59 **7 Claims**

A method of producing an artistic object on a wire screen background comprising the steps of pouring wet glue onto the wire screen in a general direction from the back of the screen to the front of the screen, attaching a paper mache filler to the beaded glue on the front of the screen, covering the filler and

the screen by molten wax and coating the wax with a fixative layer of shellac. The further requirement of the present method is that the time in between the first step and the second step be sufficiently small such that the placement of the filler is properly done at a time when the glue layer is still wet.

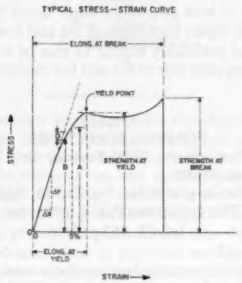
3,836,412
PREPARATION OF DISCONTINUOUS FIBER REINFORCED ELASTOMER

Kamel Boustany, and Aubert Yaucher Coran, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 29,033, April 16, 1970, Pat. No. 3,697,364. This application June 12, 1972, Ser. No. 261,712

Int. Cl. B32b *5/16*

U.S. Cl. 156—62.2 **24 Claims**



Bonded composites of discontinuous organic fiber and vulcanized matrix are prepared by treating the fiber to reduce fiber to fiber interaction, dispersing the treated fiber and bonding ingredients into vulcanizable elastomeric matrix, positioning the fiber therein taking suitable precautions to minimize fiber breakage during the dispersing and positioning of the fiber, and vulcanizing the mixture to produce a bonded composite in which the organic fiber has an aspect ratio of at least about 20 but not more than about 350.

3,836,413
METHOD OF AND APPARATUS FOR THERMOFIXING OF SLIDE-FASTENER COUPLING CHAINS

Alfons Frohlich, Veddershang 5, and Franz Hochlehnert, Gladbecker Str. 363, both of Essen, Germany

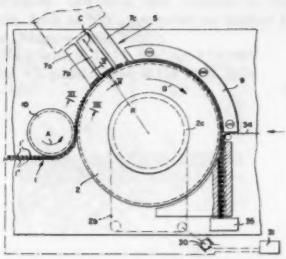
Continuation of Ser. No. 4,870, Jan. 22, 1970, abandoned. This application Aug. 28, 1972, Ser. No. 284,402

Claims priority, application Germany, Aug. 23, 1969, 1942935

Int. Cl. B32b *31/20*

U.S. Cl. 156—73 **4 Claims**

A method of and an apparatus for the fixing or setting of continuous coupling elements or chains, preferably in the form of meandering or coiled monofilament, wherein the coupling element is passed about a drum with predetermined coupling-head spacing through a station at which an ultrasonic transducer thermally sets the coupling element. Juxtaposed with the periphery of the transport wheel, which maintains the spacing of the turns or undulations of the coil or the meander,



is a radially reciprocable member constituting the vibration source or the anvil against which the vibrator operates.

3,836,414
METHOD FOR ELIMINATING BUBBLES IN LAMINATES

Henry N. Staats, Deerfield, Ill., assignor to General Binding Corporation, Northbrook, Ill.

Filed June 11, 1971, Ser. No. 152,052

Int. Cl. B32b *31/00*

U.S. Cl. 156—87 **10 Claims**

This invention provides a method of producing substantially bubble-free laminates for identification cards, photographs and the like which eliminates randomly disposed entrapped air bubbles heretofore found, which method comprises providing a texture in the heat-sealing surface of the laminate film prior to lamination pressurization with the card.

3,836,415
METHOD OF FABRICATING A PRECONTOURED UNITIZED ELECTRICAL WIRING HARNESS

Lynn H. Hilderbrandt, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

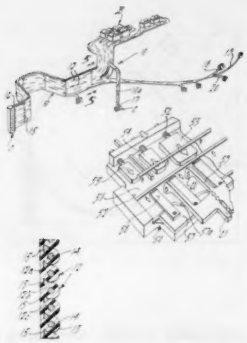
Filed Nov. 3, 1972, Ser. No. 303,664

Int. Cl. H01b *13/00;* **H02g** *3/02*

U.S. Cl. 156—296 **1 Claim**

A wiring harness comprised of a plurality of conductive wires each encased in a tubular nonconductive thermoplastic sheath and placed in side-by-side alignment, the plurality of conductive wires being precontoured and restrained in such condition by a plurality of transverse hinges formed from said thermoplastic sheathing and interconnecting adjacent wires of said harness. The unitized harness is employed in a wiring system particularly useful in an automotive vehicle; the system has connective blocks for joining the extremeties of said wires with an energy source or for switching purposes, each of said

blocks being characterized by contacts effective to penetrate the wire sheathing and make contact with the conductive element, each of said contacts having a portion for receiving remote conductors by simple insertion.



3,836,416
NON WOVEN THERMOPLASTIC FABRIC

Richard L. Ropiequet, Portland, Oreg., assignor to Alta Industries, Incorporated, Portland, Oreg.

Continuation of Ser. No. 6,834, Jan. 29, 1970, abandoned. This application Mar. 27, 1972, Ser. No. 238,124
Int. Cl. B44b *1/00;* **D04h** *3/16, 3/05*
U.S. Cl. 161—2 **16 Claims**

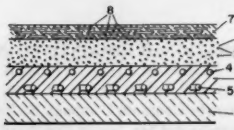
A fabric is made of filaments of solid flexible thermoplastic material which contact each other and are fused together. In certain fabrics at least some of the filaments extend parallel with each other and are fused together throughout their length. In other fabrics the filaments are fused together at spaced positions along the filaments. The filaments are extruded upon the upper surface of a moving belt or upon a previously formed fabric or previously extruded filaments on such belt. The filaments which are fused together throughout their lengths may be spaced a slight distance from each other when extruded and expand into contact with each other. Filaments which are spaced greater distances from each other when extruded have portions of the filaments displaced normal to the general direction of the filaments into contact with adjacent filaments so that they fuse to such other filaments. This can be done by regulating the rate of movement of the belt relative to the rate of extrusion of the filaments so that the filaments wander randomly on the surface of the belt or by laterally reciprocating the belt or a combination of both. Various random as well as controlled patterns including patterns having closed loops of individual filaments as well as fabrics having continuous backing sheets supporting upwardly folded filaments can be produced.

3,836,417
LAMINATE FOR HUMAN HABITATION

Luther LeMasters Yaeger, Houston, Tex., assignor to Prescienca Limited, Basel, Switzerland

Continuation of Ser. No. 125,368, March 17, 1971, abandoned. This application May 23, 1973, Ser. No. 363,198
Int. Cl. B44f *1/00;* **B32b** *5/12*
U.S. Cl. 161—5 **6 Claims**

In human habitations suitable for mass production, there is a need for a flexible foldable film or sheet material having a combination of extreme light resistance, fatigue resistance, and heat reflection. I have found that a superior combination, and the only one for which an accelerated test indicates permanence over a period exceeding 40 years, comprises the following elements: a flexible foldable film assembly, the outermost layer of which consists of opaque flakes, preferably of metal, arranged substantially with the flat side parallel to the surface, and held in a matrix of a resin belonging in the groups of acrylates and methacrylates, superimposed upon a black thermoplastic film containing at least 4 percent of a finely dispersed carbon black, this film being followed by a central layer having a modulus at least 50 percent lower than its adjacent layers, so that it will permit flexing while minimizing the stresses in such flexing. This low modulus layer further contains continuous fibers arranged in layers so that the fibers in each layer are substantially parallel with each other; and further, another second outside layer, on the other side of the central layer, at least one of the outer layers having stiffness and resistance higher than those of the said low modulus central layer, and preferably similar to that of the first outside layer on the opposite side of the said low modulus layer.



3,836,418
FOLDING STRUCTURE

Merlin W. Montgomery, 9100 Fortuna Dr., No. 4, Mercer Island, Wash. 98040

Continuation-in-part of Ser. No. 73,756, Sept. 21, 1970, abandoned. This application Feb. 2, 1973, Ser. No. 329,077
Int. Cl. A63q *31/00*
U.S. Cl. 161—17 **6 Claims**

A plurality of rectangular members interconnected by hinges such that the members in one unfolded configuration form a square having a side length to height ratio of 8:1 and in a second configuration form a cube having an edge length of four units. A flexible cord is provided interconnecting some of the rectangular members such that pulling the central portion of the cord causes the square to fold to the cube form while pulling the opposed ends of the cord causes the cube to unfold to the square form.

3,836,419
SUPPORTS FOR ORNAMENTAL DESIGNED ARTICLES

Lois-Inez Hamberger, Bethesda, Md., assignor to Eva Ehrlich, Bethesda, Md., a part interest

Filed Apr. 17, 1973, Ser. No. 361,315
Int. Cl. B44f *7/00*
U.S. Cl. 161—18 **3 Claims**

This invention is an easel, desk or hanging support for a framing means to be surrounded by ornamental rectangular plan or flat carriers, and as such can be desk or table ornament or a hanging ornament.

3,836,420
SAFETY APPLIQUE

Martin P. Freese, 3833 Ingraham St., San Diego, Calif. 92109

Filed Aug. 15, 1972, Ser. No. 280,781
Int. Cl. A01n *1/00*
U.S. Cl. 161—19 **3 Claims**

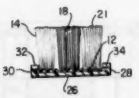
A decorative safety tread applique for use on the floor surfaces of bathtubs, showers and the like. The applique is provided with a slip-preventing upper surface and has at least one

laterally extending row of indicia-shaped openings therethrough arranged so as to be engageable by the feet of the user to further preclude accidental slipping. For purposes of advertising, the indicia-shaped openings may be arranged to form the name of a business or the like. The floor of the bathtub or shower which is visible through the indicia-shaped openings provides a permanent, highly attractive and eye-catching background.

3,836,421
WEATHER STRIP

Roy P. Terry, Jr., Clemson; Richard K. Teed, Greenwood, both of S.C., and S. Ross Shirer, deceased, late of Clemson, S.C. (Pauline H. Shirer, executrix), assignors to Riegel Textile Corporation, Ware Shoals, S.C.

Filed Mar. 30, 1973, Ser. No. 346,332
Int. Cl. D04h *11/00;* **E06b** *7/22*
U.S. Cl. 161—63 **16 Claims**



A flexible weather strip adapted to be affixed to an enclosing structure to seal an opening therein and to provide improved air and water impermeability to said structure. A base strip of flexible material has two spaced-apart rows of pile fibers extending upwardly therefrom and longitudinally thereof. A center row of pile fibers having a lesser denier per filament and a greater filament density than the filaments of the two spaced-apart rows is provided between said spaced rows to complete an arrangement which provides a circuitous path through which substantial amounts of air and water will not pass. A second preferred embodiment comprises two adjacent rows of pile fibers extending upwardly from the base strip and longitudinally thereof.

3,836,422
ANTISTATIC FABRICS

Dieter Bischoff, Hohensachsen, Germany, assignor to Carl Freudenberg, Weinheim, Germany

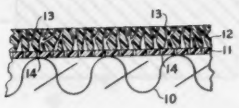
Filed Jan. 4, 1972, Ser. No. 215,356
Claims priority, application Germany, Jan. 16, 1971, 2102087
Int. Cl. B32b *5/08*
U.S. Cl. 161—154 **4 Claims**

A non-woven carpet which will not build up electrostatic charges and the process for making it, comprising forming two independent non-woven fabrics of synthetic fibers the fabric which is to constitute the tread surface containing copper fiber and the other being substantially free thereof, superposing said fabrics, and needling said superposed structure to carry fiber including copper fiber from the tread surface fabric into the base fabric layer, the overall content of copper fiber in said carpet comprising about 0.5 to 5 percent by weight of the total fiber content.

3,836,423
METHOD OF INTRODUCING AIR PERMEABILITY INTO A NON-POROUS CONTINUOUS FILM AND RESULTANT FILM

George M. Wagner, Lewiston, and Norman E. Sitgreaves, Niagara Falls, both of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Sept. 9, 1971, Ser. No. 178,985
Int. Cl. B29d *27/04;* **B32b** *3/26, 5/04*
U.S. Cl. 161—159 **9 Claims**



A porous air permeable polymer film is produced by applying to a support member an agent capable of releasing gas upon its being heated to its decomposition point and subsequently applying a first film-forming flexible polymer composition: forming a porous continuous film on said support member by heating said first layer; cooling said film and support member; applying to said porous film a layer of a second film-forming polymer composition which may be the same or different than the first film forming polymer composition; and heating the resulting structure to form a unitary porous breathable article comprised of both polymer layers. Subsequent to the application of said second film-forming polymer composition a fabric may be applied to the resulting structure to form a unitary porous air permeable article.

3,836,424
POLYISOCYANURATE FOAM ARTICLES

Harold E. Reymore, Jr., 18 Cardinal Dr., Wallingford, Conn. 06492; Adnan A. R. Sayigh, 999 Hartford Tpk., North Haven, Conn. 06473, and Robin L. Grieve, Trasraamsteen, 14, Netherlands

Filed July 18, 1972, Ser. No. 272,784
Int. Cl. B32b *5/18, 3/26*
U.S. Cl. 161—159 **15 Claims**

Novel integral-skinned polyisocyanurate foams are described, which are characterized by their improved impact resistance. The foams are prepared by conventional integral-skin foam forming techniques. The improved structural properties are obtained by employing as a polyol component of the foam forming mixture, a mixture of (a) from about 5 percent to about 60 percent by weight of a polyol having a functionality of from 2 to 8 and an equivalent weight of from 30 to 200, with (b) from about 40 percent to about 95 percent by weight of a polyether polyol having a functionality of from 2 to 3 and an equivalent weight of from about 750 to about 2100; provided that when said polyether polyol is a triol having an equivalent weight of from about 1500 to about 2100, at least about 50 percent of the hydroxyl groups thereof are primary hydroxyls. The improved foams of the invention are particularly useful as structural materials, where high impact resistance is required.

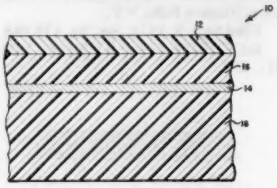
3,836,425
THIN, FLEXIBLE BARRIER MATERIAL

Philip C. Whiting, Jr., Holyoke, Mass., assignor to Ludlow Coporation, Needham Heights, Mass.

Filed Jan. 12, 1971, Ser. No. 105,853
Int. Cl. B32b *27/08;* **B65d** *31/02*
U.S. Cl. 161—165 **18 Claims**

A fabric- and fiber-free, heat-sealable structure useful as a barrier material limiting passage through itself of solids,

liquids, semisolids, gases or forms of energy such as ultraviolet light, said structure comprising a first ply of a relatively tough, biaxially-oriented film of an organic polymer adhered to a second ply of a metallic foil and a third ply of a tough polymer

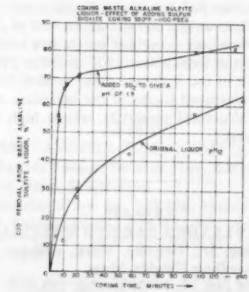


such as polyethylene. Such a laminated structure having a total thickness of less than ten mils (0.010) meets the requirements of the widely-known MIL-b-131 specification and is relatively non-directional in its strength characteristics.

3,836,426
STEEL TIRE CORD ASSEMBLY
Thomas A. Barnett, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.
Filed Dec. 29, 1972, Ser. No. 319,257
Int. Cl. B32b *5/16*; D04h *1/74*
U.S. Cl. 161—170 **3 Claims**

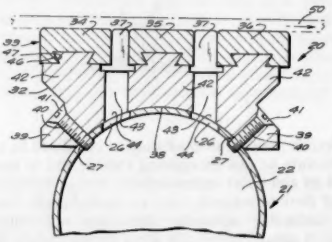
A wire assembly particularly useful as a packaging and transport assembly for steel tire cord is disclosed.

3,836,427
COKING OF WASTE ALKALINE SULFITE PULP LIQUOR AT LOWERED PH
Edward L. Cole, Fishkill; Howard V. Hess, Glenham, and William F. Franz, Gardiner, all of N.Y., assignors to Texaco Inc., New York, N.Y.
Filed June 3, 1971, Ser. No. 149,425
Int. Cl. D21c *11/02*, *11/14*
U.S. Cl. 162—31 **5 Claims**



The liquid phase coking of waste alkaline sulfite pulp liquors can be effected at a faster rate and a lower temperatures by lowering the pH of such liquors by at least one pH unit. Also desirably, both the coke yield is increased and the Chemical Oxygen Demand of the resulting effluent is lowered. The pH lowering is achieved by adding sulfur dioxide to the waste liquor either as free SO_2 or a water solution of SO_2. The effluent and the chemicals recovered after coking can be recycled in the paper pulp process from which they were recovered.

3,836,428
ADJUSTABLE SLOT SUCTION BOX COVER
David F. McConaughy, Delmar, N.Y., assignor to Albany International Corp., Albany, N.Y.
Filed Aug. 25, 1972, Ser. No. 283,648
Int. Cl. D21f *1/32*, *1/48*
U.S. Cl. 162—274 **8 Claims**

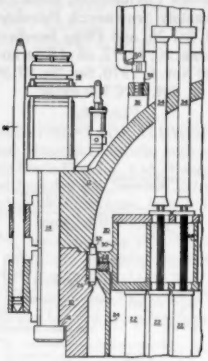


An adjustable slot cover adapted to be mounted on a suction box or pipe having openings therein in communication with a source of suction. The cover includes a base which is rigidly mounted to the suction pipe. The base includes alternate lands and slots with the slots in communication with the openings in the suction pipe. A plurality of wear strips are slidably mounted on receiving land portions of the cover with dovetail or T-shaped interengagements retaining the wear strips in position. Axial positioning of the interengaging surfaces along with the lateral width of the strips determines the portion of each wear strip which covers a portion of an adjacent slot. The dovetail or T-shaped opening in the wear strips can be located off center so that strips can be turned end for end to change the width of slot. The wear strips are interchangeable so that adjustability of slot widths is thereby achieved.

3,836,429
MEANS FOR RAPIDLY EXPOSING THE CORE OF A NUCLEAR REACTOR FOR REFUELING
Erling Frisch, Pittsburgh, and Harry N. Andrews, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 8, 1970, Ser. No. 53,207
Int. Cl. G21c *19/20*
U.S. Cl. 176—29 **6 Claims**

The upper structure of a nuclear reactor consisting of the control rod mechanisms, the pressure vessel closure head, the upper internals package, and other associated structure are connected to form an integral unit which may be removed from the reactor vessel in a single lift to expose the fuel assem-

blies of the reactor core to the open end of the reactor vessel. The closure head is hung from the control rod drive missile



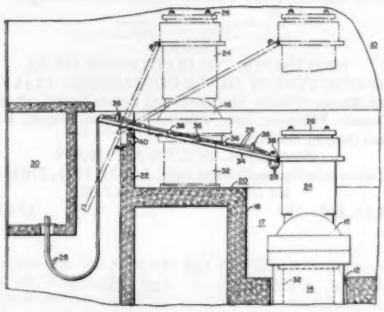
shield and the upper internals package is hung from the closure head.

3,836,430

CABLE SUPPORT STRUCTURE FOR ENABLING A NUCLEAR REACTOR TO BE REFUELED RAPIDLY

Erling Frisch, Pittsburgh, and Harry N. Andrews, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 8, 1970, Ser. No. 53,203
Int. Cl. G21c *19/20*
U.S. Cl. 176—33 **9 Claims**



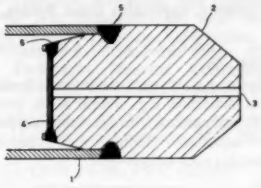
The cables containing the electrical wiring for the control rod mechanisms and the instrumentation for a nuclear reactor are brought by the shortest path to cable support racks affixed to the enclosure surrounding the control mechanisms hereinafter referred to as the mechanism enclosure. The cables are supported on a series of such support racks until they terminate in receptacles mounted on the floor of a platform attached to the mechanism enclosure on the side facing the refueling storage area for the mechanisms, vessel head and internals. An elongated frame-like cable tray is attached to the platform by a hinged joint while the other end is supported on flanged guide rollers. The cables are looped onto the cable tray at its hinged end and are supported in tiers thereon by separator plates and anchor clamps. At the other end of the tray, the cables are hung in large loops and are connected to plugs in the floor of the instrument room. The cables accordingly need not be disconnected from the mechanisms when moving same for refueling.

3,836,431

NUCLEAR FUEL RODS HAVING END PLUGS WITH BORES THERETHROUGH SEALED BY FRANGIBLE MEMBRANES

Alfred-Jean Flipot, Geel; Paul Papeleux, Angleur, and Ivan Lafontaine, Geel, all of Belgium, assignors to Belgonucleaire and Centre d'Etude de L'Energie Nucleaire, Brussels, Belgium

Filed Apr. 26, 1972, Ser. No. 247,723
Claims priority, application Belgium, May 4, 1971, 103005
Int. Cl. G21c *3/10*
U.S. Cl. 176—79 **1 Claim**



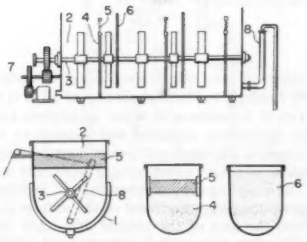
This invention relates to a cylindrical, pressurized, nuclear reactor fuel rod sealed at one end by an end plug having a frangible membrane sealing a narrow bore extending through said plug.

3,836,432

CONTINUOUS PROCESS FOR THE HYDROLYSIS OF RAFFINOSE

Junichi Shimizu, and Toshio Kaga, both of Tokyo, Japan, assignors to Hokkaido Sugar Company, Ltd., Tokyo, Japan

Division of Ser. No. 860,876, Sept. 25, 1969, Pat. No. 3,664,927. This application Sept. 2, 1971, Ser. No. 177,477
Int. Cl. C12b *1/00*
U.S. Cl. 195—11 **5 Claims**



A continuous process for hydrolyzing raffinose contained in beet sugar syrup or juice with an enzyme agent containing α-D-galactosidase, wherein as said enzyme agent the mycelial pellet of *Mortierella Vinacea* varient raffinose utilizer (hereinafter denoted as "enzyme pellet") is used, wherein α-D-galactosidase is present in the cells of the mold. By "enzyme pellet" is meant the mycelial pellet of Mortierella vinacea raffinoise utilizer containing α-D-galactosidase.

An apparatus for carrying out the above said process, comprising a U-shaped open reaction vessel which is separated into plurality of chambers by boundary plates which are so constructed as to allow the sugar syrup or juice to overflow

through replaceable screen nets fitted at the upper parts of the boundary plates; which is equipped with an interfering plate in each chamber; and which is equipped with stirrers in each chamber between the interfering and boundary plates.

3,836,433

FIXATION OF NITROGENOUS MATERIALS

Pierre-Charles Wirth, and Rene Tixier, both of Paris, France, assignors to Societe Generale De Recherches Et D'Applications, Scientifiques Sogeras, Paris, France

Filed Apr. 13, 1972, Ser. No. 243,875

Claims priority, application Great Britain, Apr. 16, 1971, 9669/71

Int. Cl. C07g *7/02*; **C08b** *15/06*

U.S. Cl. 195—68 **10 Claims**

Dialdehydes, e.g., glyoxal or glutaraldehyde are used to fix nitrogenous materials, e.g., amino acids, proteins, enzymes, antigens, hormones, etc., to insoluble supports which form gels in aqueous media, e.g., polyacrylamide or polysaccharides such as agar-agar.

3,836,434

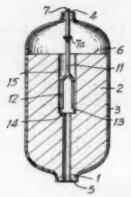
PROCESS FOR DECOKING A DELAYED COKER

Anton R. Novy, Johnson City, Tenn., assignor to Great Lakes Carbon Corporation, New York, N.Y.

Filed Mar. 27, 1972, Ser. No. 238,304

Int. Cl. C10c *3/18*

U.S. Cl. 201—2 **6 Claims**



Coke is removed from the delayed coker or container by hydraulically cutting a substantial portion or all of it in a substantially vertical direction with water jet streams emanating from nozzles operatively mounted and coupled to a central drill stem which is provided with water under pressure and which is capable of rotation and vertical movement within the container. The coupling is by mechanical and hydraulic linking means permitting the movement of the nozzles in a radial direction from the axis of the central drill stem. After the cutting of the pilot hole with a conventional cutting head designed for that purpose, a substantial portion or all of the remainder of the coke in the container is removed by hydraulically cutting the coke in a substantially vertical direction by directing the water jet streams from the nozzles in a substantially vertical and downward direction against the horizontal surface of the coke in a series of radial incremental distances (which may be variable) substantially circumferentially across the surface of the coke. After each radial incremental cut, the drill stem is raised in the container, the nozzles are extended radially and the nozzles are then moved vertically from the top of the coke to the bottom thereof by lowering the drill stem as the coke is removed by the action of the water, thereby forming a varying, increasing-diameter, cylindrical void in the container through which passes the remainder of the coke that is removed in this manner.

3,836,435

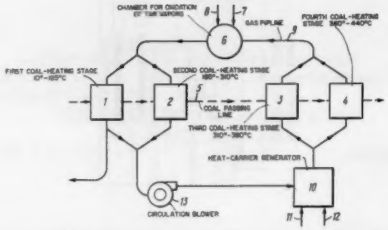
METHOD OF HEAT TREATMENT OF COAL

Jury Pavlovich Skornyakov, ulitsa Ekonomicheskaya, 7a, kv. 33; Jury Borisovich Tjutjunnikov, ulitsa Kostomarovskaya, 5/7, kv. 10; Anatoly Semenovich Petrukhno, ploschad R. Ljuxemburg, 5, kv. 26, and Filipp Savelievich Schelkunov, prospekt Gagarina, 20, kv. 72, all of Kharkov, U.S.S.R.

Filed Nov. 6, 1970, Ser. No. 87,398

Int. Cl. C10b *49/00*

U.S. Cl. 201—27 **4 Claims**



The proposed method is characterized by raising the temperature of heating of a coal charge in each subsequent stage by a value which is somewhat less than the temperature rise in the preceding stage so that in the next to last stage there is provided heating of the coal charge to a temperature at which the resin vapours start to isolate from the coal charge. The method is also characterized in that the circulating gaseous heat carrier of the nest to last and the last stages of heating is purified from impurities prior to the recirculation. In order to carry this method into effect, the multistage apparatus is provided with a chamber for purification of the gaseous heat carrier from impurities arranged between two groups of chambers for successive step-wise heating of the coal charge.

3,836,436

PROCESS FOR THE ELECTROCHEMICAL MANUFACTURE OF SILVER CONTAINING CATALYSTS

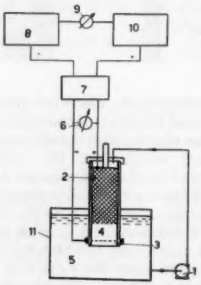
Luigi Rivola; Vittorio Mormino, and Bruno Notari, all of San Donato, Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato, Milanese, Italy

Filed July 28, 1972, Ser. No. 275,937

Claims priority, application Italy, July 31, 1971, 27022/71

Int. Cl. C22d *5/00*; **B01k** *3/00*

U.S. Cl. 204—10 **13 Claims**



A process is disclosed whereby a silver containing catalyst is produced, in a particle size ranging from 300 to 1,500 A, through the pulsed electrolysis of a solution of a silver salt (e.g., silver nitrate) in the presence of a complexing agent (e.g., ammonia) wherein current is fed to the solution for

spaced periods of a few seconds duration. Advantageously, after about 10–15 cycles of feeding and interrupting the current to the solution, a current inversion lasting from a few seconds is effected. The silver is obtained in the form of a powder which, after washing, can be used directly or supported on a ceramic material as catalyst for the production of ethylene oxide.

3,836,437

SURFACE TREATMENT FOR ALUMINUM PLATES

Chiaki Osada, and Masataka Murata, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed June 4, 1973, Ser. No. 367,068
Claims priority, application Japan, June 3, 1972, 47-55471
Int. Cl. C07c *45/24*
U.S. Cl. 204—17 **5 Claims**

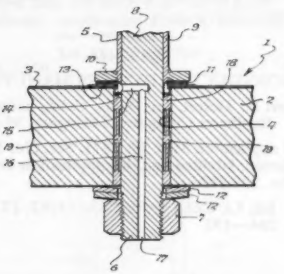
A process for anodically oxidizing aluminum plates in an aqueous solution of trisodium phosphate at certain concentrations and conditions is disclosed. The process provides an aluminum plate which can be used as a printing plate support.

3,836,438

APPARATUS FOR THE RECOVERY OF LEAKAGES OF BRINE IN THE METALLIC BOTTOMS OF DIAPHRAGM CELLS

Bernard Sartre, Levallois; Jean-Marie Pigeaud, and Daniel Masure, both of Martigues, all of France, assignors to Rhone-Progil, Paris, France

Filed May 29, 1973, Ser. No. 364,623
Claims priority, application France, Feb. 23, 1973, 73.07223
Int. Cl. B01k *3/00*
U.S. Cl. 204—279 **4 Claims**



Apparatus for the recovery and discharge of electrolyte leakage in diaphragm type electrolytic cells, whereby openings in the anodic bottoms which accommodate anode shafts are provided sealing means and with duct means channeling electrolyte leakage through the hollow shafts of the anodes.

3,836,439

METHOD FOR FORMING A COLORED OXIDE COATING ON SURFACES OF ALUMINUM OR ALUMINUM ALLOY

Masashi Ikegaya and Fumio Shigeta, Shizuoka, Japan, assignors to Riken Light Metal Industries Co., Ltd., Shizuoka, Japan

No Drawing. Filed Oct. 20, 1972, Ser. No. 299,329
Claims priority, application Japan, Oct. 22, 1971, 46/83,336, 46/83,337, 46/83,338; Nov. 30, 1971, 46/95,850; May 12, 1972, 47/46,487; May 29, 1972, 47/52,528; July 5, 1972, 47/66,624
Int. Cl. C23b *9/02*
U.S. Cl. 204—58 **2 Claims**

Colored oxide coatings having a broad range of bronze colors on aluminum or aluminum alloy material are formed by anodic oxidation with an aqueous solution containing 0.5–10% by weight per volume of oxalic acid and 0.05–1.0% by weight per volume of sulfuric acid. When the electrolytic bath is maintained at a low temperature or the above described aqueous solution contains additionally aluminum ion, nitric acid or a mixture of nitric acid and boric acid, the described colored oxide coating can be obtained in a shortened time.

3,836,440

PROCESS FOR THE MANUFACTURE OF PHENYLHYDRAZINE

Hartmuth Alt, deceased, late of Munich, Germany, by Ortwin Franz Felix Alt, Straubing, and Gudrun Anneliese Beyer nee Alt, Hohensachsen, near Weinheim, executors, and Hermann Clasen, Falkenstein, Taunus, and Jurgen Cramer, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Nov. 20, 1972, Ser. No. 307,776
Claims priority, application Germany, Nov. 20, 1971, P 21 57 608.9
Int. Cl. C07b *29/06;* **C07c** *109/04*
U.S. Cl. 204—74 **5 Claims**

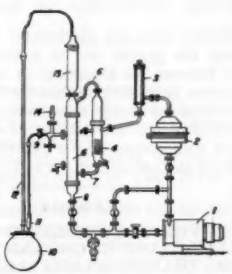
A process for the manufacture of phenylhydrazine by cathodic reduction with separation of cathode and anode spaces by a diaphragm wherein diazoaminobenzene dissolved in an electrolyte is reduced on solid electrodes.

3,836,441

ELECTROCHEMICAL OXIDATION PROCESS

James Peter Millington, Chester, England, assignor to The Electricity Council, London, England

Filed Jan. 11, 1972, Ser. No. 216,987
Claims priority, application Great Britain, Jan. 12, 1971, 1,502/71
Int. Cl. B01k *1/00;* **C07b** *3/00*
U.S. Cl. 204—78 **8 Claims**



A process for the electrochemical oxidation of an oxidizable organic compound to an oxidized form comprises,

(a) subjecting the oxidizable organic compound dissolved or suspended in an electrolyte to electrolysis in an electrolytic cell by
(b) passing the electrolyte containing the oxidizable organic compound through a lead dioxide mesh electrode, as the anode, disposed in the electrolytic cell,
(c) said lead dioxide mesh electrode comprising a substrate of titanium mesh having a coating of lead dioxide electrodeposited thereon.

An apparatus for the electrochemical oxidation of an oxidizable organic compound is also described.

3,836,442

PROCESS FOR RECOVERING MERCURY FROM BRINE SOLIDS

Warren E. Dean and William E. Makris, New Martinsville, W. Va., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed July 20, 1972, Ser. No. 273,587

Int. Cl. C01b *17/20;* C01d *1/08*

U.S. Cl. 204—99 7 Claims

Mercury is removed from electrolytic cell solids, comprising magnesium hydroxide, ferric hydroxide, and calcium carbonate, by contacting the solids with an aqueous sulfide solution to form soluble mercury polysulfide. In a preferred embodiment, the mercury containing solids are first treated with a hypochlorite oxidizing agent.

3,836,443

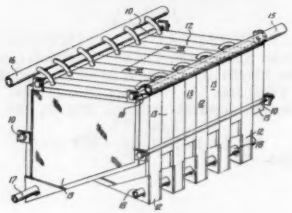
ELECTROWINNING OF ORES

Douglas MacGregor, 972 East 5650 South, Salt Lake City, Utah 84121

Continuation-in-part of abandoned application Ser. No. 43,403, June 4, 1970. This application June 3, 1971, Ser. No. 149,754

Int. Cl. C22d *1/00, 1/16, 1/24*

U.S. Cl. 204—105 M 26 Claims



Metalliferous ores are electrowon by grinding them and passing the ground ore in a slurry containing an electrolyte between the electrodes of an electrolytic cell. The electrolyte is so selected that the free surface energy of the ore plus the energy contributed to the ore by the electrical field of the cell exceeds the energy supplied by the ionized components of the electrolyte so that metal plates out on the cathode of the cell.

3,836,444

PROCESS FOR POLYMERIZING CONJUGATED DIOLEFINS USING ORGANIC COMPOUNDS OF THE TRANSITION METALS AS CATALYSTS

Georgis Codet, Reuil-Malmaison, Franco Dawans, Bougival, and Francois-Xavier de Charentenay, Reuil-Malmaison, France, and Philippe Teyssie, Neuville-en-Combroz, Belgium, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Reuil-Malmaison, France

No Drawing. Continuation-in-part of application Ser. No. 862,948, Oct. 1, 1969, now Patent No. 3,739,003. This application Mar. 23, 1973, Ser. No. 344,177

Claims priority, application France, Oct. 1, 1968, 168,366

Int. Cl. C08d *1/00;* C08f *1/16*

U.S. Cl. 204—159.24 23 Claims

Conjugated diolefins are polymerized with catalysts of the formula

$$[(H_{3-n}X_nCCO_2)_mM_T(Y)_p]_qL_r$$

wherein

X is a halogen atom,

n is 1, 2 or 3,

M_T is a transition metal from Groups IV to VIII of the Periodic Chart of the Elements,

Y is an anion other than OH,

each of m, p and q is an integer from 1 to 4 inclusive, $m+p$ being such as to constitute an electrically neutral compound,

L is a Lewis base, and

r is a number from 0 to 2 inclusive,

said compound being used in an amount ranging from 10^{-3} to 2 gram-atom of the metal M_T per 100 moles of said conjugated diolefin.

Preferred catalysts include nickel monochlorotrifluoroacetate, nickel monobrome-trifluoroacetate, cobalt monochloro-trifluoroacetate and complexes thereof.

3,836,445

PROCESS FOR THE HALOGENATION OF SIDE CHAINS OF AROMATIC COMPOUNDS

Tutomu Sano and Masaharu Doya, Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

No Drawing. Filed Jan. 18, 1973, Ser. No. 324,869

Claims priority, application Japan, Jan. 24, 1972, 47/8,329

Int. Cl. B01j *1/10*

U.S. Cl. 204—163 R 7 Claims

The invention relates to a process for the halogenation of the lower alkyl groups of aromatic compounds by reacting said aromatic compounds under irradiation with ultraviolet rays with a halogen in the presence of a N-lower alkyl-substituted acid amide such as N-methylformamide, N,N - dimethylformamide, N-N-dimethyl-acetamide or N-methyl urea.

3,836,446

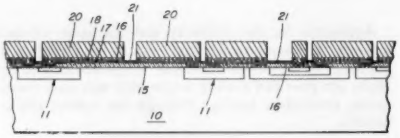
SEMICONDUCTOR DEVICES MANUFACTURE

Karl H. Tiefert, Los Altos, Calif., assignor to Raytheon Company, Lexington, Mass.

Original application May 10, 1971, Ser. No. 141,857, now abandoned. Divided and this application Sept. 20, 1972, Ser. No. 290,593

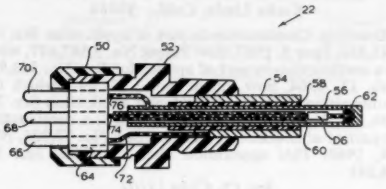
Int. Cl. C23b *5/50;* C23c *13/02, 15/00*

U.S. Cl. 204—192 19 Claims



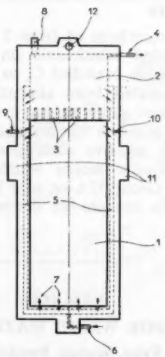
Semiconductor structures having multi-layer metal conductors formed on the surface of the semiconductor devices and having excess metal between the conductors removed by sputter etching in an atmosphere which produces oxidization of one of the metal layers of said conductors. The metal compound mask thus formed inhibits the etching process in the regions where the oxidized layer is exposed and protects the active components beneath the layer. The oxidized portions of the masking layer are then removed by a suitable solvent or etch. A chemical etching metal compound mask may be formed of a metal and the semiconductor material for separating the chips from the wafer by anisotropic etching.

3,836,447
PROBE FOR DETECTING THE LEVEL OF SUBSTANCES IN FLUID BODIES
Donald R. Emmons, 11222 Astronaut Blvd., Orlando, Fla. 32809
Filed Nov. 10, 1972, Ser. No. 305,237
Int. Cl. G01n *27/30, 27/52*
U.S. Cl. 204—195 R 6 Claims



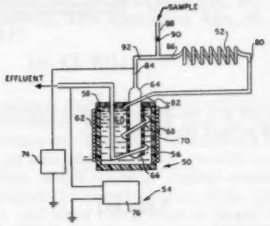
The addition of substances, such as chlorine, to fluid bodies is controlled and the concentration of such substances is monitored by a system including a temperature compensated probe for measuring the concentration, and electronic means responsive to outputs of the probe for adding the substance, as needed, to the desired level.

3,836,448
FRAMES FOR ELECTROLYTIC CELLS OF THE FILTER-PRESS TYPE
Pierre Bouy, Enghien-les-Bains, and Daniel Collard, Paris, France, assignors to Rhone-Progil, Paris, France
Filed Dec. 13, 1972, Ser. No. 314,817
Claims priority, application France, Dec. 23, 1971, 7146295
Int. Cl. B01k *3/00*
U.S. Cl. 204—270 7 Claims



Frames for electrolytic cells of the filter-press type are provided which comprises a lower zone provided for receiving an anode or a cathode, and an upper zone in the form of a closed box, for ensuring separation of the gases produced by electrolysis from the electrolyte, the upper zone extending said lower zone, the lower zone communicating with the upper zone by way of one or more apertures in the lower part of said box, the sealing means ensuring sealing of the cells being applied over the periphery of the lower zone.

3,836,449
ELECTROLYTIC CELL FOR USE WITH VAPOR PHASE DETECTORS
James E. Lovelock, Bowerchalke, near Salisbury, England, assignor to California Institute of Technology, Pasadena, Calif.
Original application June 1, 1970, Ser. No. 41,905, now Patent No. 3,701,632. Divided and this application Oct. 26, 1972, Ser. No. 300,908
Int. Cl. B01k *3/00*; C23f *1/02*; G03c *5/00*
U.S. Cl. 204—277 7 Claims



The change in potential difference, resistance or current flow between electrodes in an electrolytic cell is utilized to detect pressure change, absolute hydrogen pressure and pressure of other gases present in hydrogen carrier gas, particularly those which are reactive with the electrodes. At least one of the electrodes is formed of a material selectively permeable to hydrogen, preferably comprising palladium. The cell may be simultaneously utilized for separation and regeneration of hydrogen carrier gas and may be conveniently integrated and combined with a gas chromatographic column on a small size chip containing recesses for the cell and column components formed by conventional etching-masking techniques.

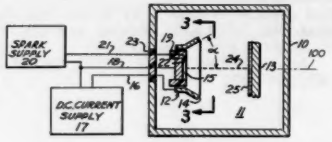
3,836,450
BIPOLAR ELECTRODE
Robert F. Schultz, Niagara Falls, and Edward H. Cook, Jr., Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Filed May 25, 1973, Ser. No. 364,196
Int. Cl. B01k *1/00, 3/06*; C01b *11/26*
U.S. Cl. 204—290 F 12 Claims

An improved dimensionally stable bipolar electrode for use in electrochemical applications comprising a central valve metal layer, suitable anodic material on the anode side of the valve metal, a barrier layer of a metal silicide on the cathode side protected by a suitable common metal coating. Such electrodes function at low hydrogen permeability rates during use in electrolytic processes.

3,836,451
ARC DEPOSITION APPARATUS
Alvin A. Snaper, Chatsworth, Calif. (2800 Cameo Circle, Las Vegas, Nev. 89107)
Original application Dec. 26, 1968, Ser. No. 787,029, now Patent No. 3,625,848. Divided and this application Oct. 21, 1970, Ser. No. 82,744
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 18 Claims

A deposition process comprising emitting a beam of particles consisting of atoms and ions of source material, each particle having a kinetic energy between about 10 and 100 electron volts. The particles are deposited onto an object to coat the object with a thin film of source

material. A beam gun is provided having an anode and a cathode and is supplied with current of such magnitude



as to cause an arc discharge to occur between the anode and cathode to emit the beam.

3,836,452

CONVERSION OF BLACK OIL WITH METAL BORIDE OR BOROHYDRIDE CATALYST

William K. T. Gleim, Island Lake, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Original application Aug. 23, 1972, Ser. No. 282,998. Divided and this application Dec. 14, 1972, Ser. No. 315,036

Int. Cl. C10g *13/02, 23/00*

U.S. Cl. 208—108 **3 Claims**

Asphaltene-containing hydrocarbonaceous charge stocks are reacted with hydrogen in contact with a catalytic composite of at least one metal component selected from the group consisting of the borides and borohydrides of the metals from Groups IV, V and VI. A slurry-type process, which may be effected either with a metallic component being composited with a porous carrier material, or with the unsupported metallic component, and admixed with the fresh feed charge stock.

3,836,453

PROCESS FOR HYDROGENATION-HYDROTREATING OF HYDROCARBON MIXTURES

Stephen M. Kovach, Ashland, Ralph E. Patrick, Flatwoods, and Ronald A. Kmecak, Ashland, Ky., assignors to Ashland Oil, Inc., Columbus, Ohio

No Drawing. Continuation-in-part of application Ser. No. 133,349, Apr. 12, 1971, which is a continuation of application Ser. No. 769,740, Oct. 22, 1968, both now abandoned. This application July 18, 1972, Ser. No. 272,855

Int. Cl. C10g *23/02*

U.S. Cl. 208—143 **1 Claim**

A process for hydrogenation-hydrotreating of hydrocarbon materials, comprising; contacting a hydrocarbon material, such as naphthas, kerosene, cycle oils, gas oils, coal liquids, and particularly a hydrocarbon material containing naphthalene, alkylbenzenes, and alkylnaphthalenes, with a catalyst containing an active hydrogenation-dehydrogenation metal, such as a metal selected from the group consisting of IB, IIB, VB, VIB and VIII of the Periodic System and a basic metal oxide promoter selected from the group consisting of Groups IA, IIA, IV, and rare earth metals of the Periodic System, both deposited on an inert oxide support, such as gamma aluminas, silica-alumina, silica-zirconia, silica-magnesia, etc., at a temperature of about 500 to 900 F., a pressure of about 100 to 3000 p.s.i.g., a liquid hourly space velocity between about 0.1 and 10, and a hydrogen-to-hydrocarbon mole ratio of about 3 to 15 to 1.

3,836,454

CONVERSION PROCESS AND CATALYSTS

Rowland C. Hansford, 19463 Oriente Drive, Yorba Linda, Calif. 92686

No Drawing. Continuation-in-part of application Ser. No. 643,353, June 5, 1967, now Patent No. 3,547,807, which is a continuation-in-part of application Ser. No. 343,932, Feb. 11, 1964, now Patent No. 3,324,047, which is a continuation-in-part of abandoned application Ser. No. 150,129, Nov. 6, 1961, which in turn is a continuation-in-part of abandoned application Ser. No. 72,325, Nov. 29, 1960. This application Oct. 26, 1970, Ser. No. 84,141

Int. Cl. C10g *13/02*

U.S. Cl. 208—111 **7 Claims**

Hydrocracking catalysts are disclosed consisting essentially of a physical, particle-form mixture of (1) a crystalline aluminosilicate component having a sodium content of less than 4 percent by weight, and (2) a hydrogenation component comprising a predominant proportion of a porous support, other than a crystalline aluminosilicate, and a minor proportion of at least one constituent exhibiting hydrogenation activity. Hydrocracking processes using such catalysts are also disclosed.

3,836,455

SEPARATION OF CLOSELY RELATED ALIPHATIC HYDROCARBONS WITH CATION-EXCHANGED OFFRETITE ZEOLITE

George C. Blytas, Houston, Tex., assignor to Shell Oil Company

No Drawing. Filed Feb. 9, 1973, Ser. No. 330,940

Int. Cl. C07c *7/12*

U.S. Cl. 208—310 **12 Claims**

Aliphatic hydrocarbons of from 5 to 8 carbon atoms having two methyl substituents on the same carbon atom or more highly branched C_5 to C_8 aliphatic hydrocarbons are separated from aliphatic hydrocarbons of from 5 to 8 carbon atoms having two methyl groups on different carbon atoms or less-branched C_5 to C_8 aliphatic hydrocarbons by selective adsorption employing a specially-treated offretite zeolite which has been ion-exchanged with a Group IIA or rare earth metal. Use of this separation to increase the octane rating of gasoline is also disclosed.

3,836,456

TREATMENT FOR WASTE WATER OR THE LIKE

Hjalmar Elias Fries, Spanga, Sweden, assignor to ITT Industries, Inc., New York, N.Y.

Filed Dec. 11, 1972, Ser. No. 314,139

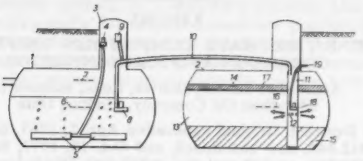
Claims priority, application Sweden, Dec. 14, 1971, 15,983

Int. Cl. C02b *1/20;* **C02c** *5/04*

U.S. Cl. 210—16 **4 Claims**

Water clarification and/or purification is achieved by establishing, in a first tank, vertically spaced floating and sunken sludge layers separated by a water layer that clears over a period of time. The raw waste is aerated in a second tank and thereafter withdrawn therefrom and in-

jected with a precipitation agent including, but not limited to, a solution of aluminum sulfate into the clarified water layer at a vertical location spaced from both of the sludge layers. After the injection step is completed, the first tank is allowed to stand for the said period so that the water layer can again clear. At least a portion of the clarified water in the water layer is then removed therefrom at a



vertical location between and spaced from the reformed sludge layers. The above-described steps may then be repeated, if desired. The stratification of all three layers is fairly continuous except that the water layer must, over spaced periods, be allowed time to clear. Either one of the sludge layers may be drained off whenever the thickness of the said one sludge layer becomes so great in comparison to the first tank depth only an inefficiently small batch of the aerated waste water can be pumped into the first tank and can thereafter be clarified.

3,836,457

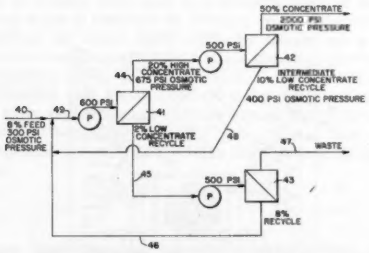
SYSTEM FOR CONCENTRATING SOLUTIONS BY LOW PRESSURE RECYCLING

Marvin C. Gross, Maple Shade, N.J., and Regis R. Stana, Murrysville, Franklin D. Klem, Pittsburgh, and Raymond E. Shaffer, Greensburg, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 19, 1973, Ser. No. 342,572

Int. Cl. B01d *13/00, 31/00*

U.S. Cl. 210—23 **10 Claims**



A fluid concentration system is operated by (1) pumping a feed solution of low concentration, having an osmotic pressure below about 600 p.s.i., into a first stage reverse osmosis membrane separation apparatus operating at a driving pressure of up to about 800 p.s.i., to provide a first lower concentrate solution and a first high concentrate solution; (2) pumping the high concentrate solution into a second stage reverse osmosis membrane separation apparatus, operating at a driving pressure of up to about 800 p.s.i., to provide an intermediate low concentrate solution and a second high concentrate solution, having an osmotic pressure of between about 800 to 3000 p.s.i.; and (3) recycling at least one of the low concentrate solutions back through at least one of the reverse osmosis membrane separation apparatus.

3,836,458

WATER PURIFICATION MEANS

Craig Wallis and Joseph L. Melnick, Houston, Tex., assignors to The Carborundum Company, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 184,190, Sept. 27, 1971, which is a continuation-in-part of application Ser. No. 135,463, Apr. 19, 1971, both now abandoned. This application Apr. 20, 1973, Ser. No. 353,147

Int. Cl. B01d *13/00, 31/00*

U.S. Cl. 210—23 **12 Claims**

A filter system is provided for the purification of water, whereby particulates and viruses may be economically and reliably removed. The system comprises a filter means for removal of silts and colloidal materials, a treated carbon virus filter, and a specially treated honeycomb cartridge for removal of microbiological flora, e.g., bacteria, fungi, molds, and algae one micron or larger. Optionally, the system may include reverse osmosis means, an ion exchange demineralizer, and an ultrafine membrane filter.

3,836,459

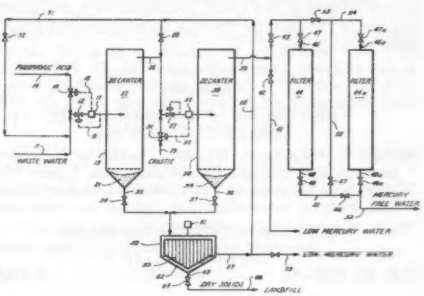
MERCURY REMOVAL FROM LATEX PAINT WASTE WATER

Ralph A. Shoberg and Paul E. Cravens, Houston, Tex., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Dec. 18, 1972, Ser. No. 315,771

Int. Cl. C02b *1/18;* **C02c** *5/02*

U.S. Cl. 210—28 **9 Claims**



A process for the removal of organic mercury compounds and dispersed solids from waste water generated in the manufacture of water-thinned paints. The waste water receives an addition of phosphoric acid until the pH is adjusted to about 3.0. A major portion of the organic mercury compound (e.g., phenyl mercuric acetate) and water-dispersibled solids precipitate from the waste water. The precipitate is separated from the waste water. Then, the waste water is adjusted to a pH of at least about 7.5 by the addition of calcium hydroxide so that a substantially complete precipitation of the residual organic mercury compound and water-dispersibled solids is obtained. The precipitated solids are removed from the relatively mercury and solids free water phase. Then, the water phase is passed to a subsequent utilization. The precipitated mercury and solids may be treated to

provide a substantially dry material suitable for landfill. A waste water with zero mercury content can also be produced.

3,836,460

PROCESS FOR REMOVAL OF ALGAE, DIATOMS AND ORGANIC CONTAMINANTS FROM WATER

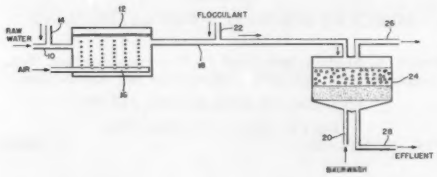
Roderick M. Willis, 2624 W. Crockett 98199, and Charles L. Oldfather, 8812 40th Ave. SW. 98116, both of Seattle, Wash.

Filed Mar. 27, 1972, Ser. No. 238,119

Int. Cl. B01d *21/01;* **C02b** *1/20*

U.S. Cl. 210—44 **3 Claims**

The bulk of algae, diatoms and other organic contaminants is effectively removed from river waters and other surface water preliminary to or concurrently with conventional flocculation processes by contacting the raw water with an amount of an organic cationic polyelectrolyte at a polymer dosage beyond the range where a visible floc is formed, generally 15 to 50 parts per million. The coalesced material is removed from the effluent by sparging finely dispersed air through the treated water to float the material. The floating material is removed by skimming or other suitable means. The



treated effluent is then either flocculated by a conventional process or run directly through an inverted bed filter for filtering the same.

3,836,461

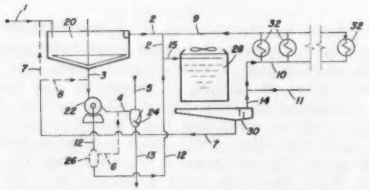
TREATMENT AND USE OF WASTE EFFLUENT STREAMS

Richard T. Whitehead, Westfield, Benjamin J. Luberoff, Summit, and Morgan Chuan-Yuan Sze, Upper Montclair, N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Sept. 7, 1972, Ser. No. 286,939

Int. Cl. B01d *1/24*

U.S. Cl. 210—56 **6 Claims**



An aqueous waste stream from an industrial chemical or other processing plant can be utilized to furnish cooling water for use in the same or another plant by partially vaporizing it in a cooling tower, after filtering off any suspended solids, utilizing the cooled liquid as cooling water for heat exchangers, and returning the heat-exchanged water to the cooling tower. Chemicals precipitated from the waste stream during vaporization can be recovered or burned as fuel in the plant. Small amounts of volatile wastes can be removed by vaporization in the cooling tower. Total recycle or elimination of all materials in the waste stream results in the reduction or elimination of pollution of local waters.

3,836,462

AMINE/PHOSPHATE COMPOSITION USEFUL AS CORROSION AND SCALE INHIBITOR

Arthur Lee Larsen, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio

No Drawing. Original application Apr. 2, 1969, Ser. No. 812,847, now abandoned, and Oct. 18, 1971, Ser. No. 190,266, now Patent No. 3,787,319. Divided and this application Mar. 29, 1973, Ser. No. 345,946

Int. Cl. C02b *5/06*

U.S. Cl. 210—58 **2 Claims**

A composition useful as a corrosion and scale inhibitor is obtained by reacting an N-secondary alkyl alkylene diamine (e.g. contains an average of 8–20 carbon atoms in the alkyl group and 2–4 carbon atoms in the alkylene group) and a phosphate ester, obtained for example by reacting about equal molar amounts of polyphosphoric acid and a condensation product of an aliphatic primary alcohol (preferably contains 3–6 carbon atoms) and at least one mole (preferably 1–10 moles) of an alkylene oxide (preferably ethylene oxide). Final reaction product can have a pH of 5–9.

3,836,463

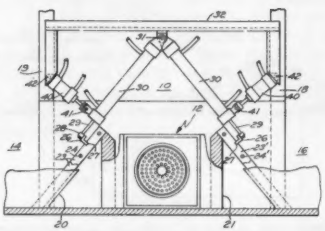
SYSTEM AND APPARATUS FOR CLEANING BAR GRID

Roger W. Teague and Richard Paul Snyder, Largo, Fla., assignors to General Signal Corporation

Filed July 28, 1972, Ser. No. 275,914

Int. Cl. B01d *33/00*

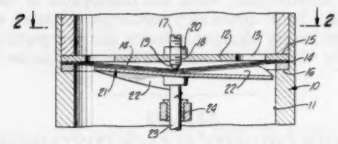
U.S. Cl. 210—162 **8 Claims**



An automatic rake is provided for a bar grid which bar grid is mounted in a flume adjacent a waste disintegrator. The rake is preferably provided with a plurality of fingers extending between the bars of the grid and is reciprocated by a motor and is provided with a second motor member which is adapted to lift the rake away from the bar grid if an obstruction is met. Automatic means are provided so that when the obstruction is sensed, the rake will reverse itself and go to the bottom of the grid again. The arrangement is such in combination with a waste disintegrator that the material from the grid will be raked into the path of the disintegrator to be pulverized therein.

3,836,464
FILTER SCREEN MOUNTING
Richard H. Brookins, Pomona, and John Paul Miller, Garden Grove, Calif., assignors to Brown International Corporation, Covina, Calif.
Filed July 14, 1972, Ser. No. 272,053
Int. Cl. B01d *29/04*
U.S. Cl. 210—413 **4 Claims**

A power filter has an apertured back-up plate mounted in a circular opening in a stationary member. One or more substantially flat circular screens are positioned in the opening adjacent the back-up member, and their outer peripheries are secured relative to the stationary member. A threaded element mounted centrally on the back-up



member applies an axial force to the screens to deflect them away from the back-up member and to place them in tension. A rotary impeller in the opening is placed closely adjacent the tensioned screens and has blades shaped to conform thereto.

3,836,465
COMPOSITION USEFUL AS A FLUID LOSS CONTROL AGENT
John S. Rhudy and John A. Davis, Jr., Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio
No Drawing. Continuation-in-part of application Ser. No. 257,127, May 26, 1972, now Patent No. 3,747,681. This application Apr. 26, 1973, Ser. No. 354,602
Int. Cl. C10m *3/22, 3/34*
U.S. Cl. 252—8.5 C **7 Claims**

A composition particularly useful as a fluid loss control agent in drilling fluids and as a diverting agent in subterranean strata is obtained by forming an aqueous solution comprised of about 0.005–10% by weight of a high molecular weight polyalkylene oxide polymer (preferably polyethylene oxide polymer having a MW of 100,000–10,000,000) and about 0.005–10% by weight of a natural resin, e.g. sodium or calcium lignosulfate. This aqueous solution is highly viscoelastic, i.e., it is a fluid when not agitated but exhibits a gel-like characteristic upon agitation.

3,836,466
SOLID LUBRICANT
Wataru Abe, Chigasaki, and Akio Muto and Yasuyuki Terada, Fujisawa, Japan, assignors to Oiles Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of abandoned application Ser. No. 43,477, June 4, 1970. This application June 15, 1973, Ser. No. 370,419
Int. Cl. C10m *7/02, 7/04, 7/06*
U.S. Cl. 252—12 **7 Claims**

This invention relates to a solid lubricant suitable for use at the high temperature of 400–500° C. manufactured by adding a predetermined amount of sodium fluoride to either graphite or a mixture of graphite and tungsten disulfide.

The addition of the predetermined amount of sodium fluoride is effective for protecting oxidation of the solid lubricant and increasing the life of a film formed on a sliding surface.

3,836,467
COLD METAL FORMING LUBRICANT
Frederick W. C. Jones, Royal Oak, Mich., assignor to Oxy Metal Finishing Corporation, Warren, Mich.
No Drawing. Filed Apr. 28, 1971, Ser. No. 138,357
Int. Cl. C10m *3/04, 3/34, 7/38*
U.S. Cl. 252—18 **16 Claims**

Cold metal forming lubricant comprising effective amounts of:

(a) water (optional)
(b) alkali metal orthophosphate
(c) alkali metal fatty acid soap
(d) alkali metal alkaryl sulfonate.

3,836,468
GREASES THICKENED WITH KETO FATTY ACID LITHIUM SOAPS OR KETO CYANOETHYLATED FATTY ACID LITHIUM SOAPS
Harold E. Kenney, Jenkintown, Edward T. Donahue, Philadelphia, and Gerhard Maerker, Oreland, Pa., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Original application July 25, 1972, Ser. No. 275,010. Divided and this application Aug. 24, 1973, Ser. No. 391,183
Int. Cl. C10m *5/14, 5/20, 7/30*
U.S. Cl. 252—33.6 **5 Claims**

Keto fatty acids or derivatives of keto fatty acids are cyanoethylated and the resulting three carbon cyanoethyl branched chain fatty acids are mixed with an appropriate amount of a diester or a petroleum base oil. The mixture is then reacted in situ with a dilute aqueous solution of lithium hydroxide to obtain a stable grease.

3,836,469
LUBRICANTS AND FUELS CONTAINING ESTER-CONTAINING COMPOSITIONS
Clark Ober Miller, Willoughby Hills, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
No Drawing. Continuation-in-part of application Ser. No. 360,207, May 14, 1973, which is a continuation of application Ser. No. 152,424, June 11, 1971, now abandoned, which is a division of application Ser. No. 12,838, Feb. 19, 1970, now abandoned, which in turn is a continuation-in-part of application Ser. No. 823,990, May 12, 1969, now abandoned. This application June 8, 1973, Ser. No. 368,545
Int. Cl. C10m *1/24, 1/26*
U.S. Cl. 252—40.5 **15 Claims**

Ester-containing compositions prepared by reacting a high molecular weight carboxylic acid acylating agent with polyoxyalkylene alcohol demulsifiers for aqueous emulsions. The ester-containing compositions are useful as additives in normally liquid fuels and lubricants.

3,836,470
LUBRICANTS AND FUELS CONTAINING ESTER-CONTAINING COMPOSITIONS
Clark Ober Miller, Willoughby Hills, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
No Drawing. Continuation-in-part of application Ser. No. 359,952, May 14, 1973, which is a continuation of application Ser. No. 152,426, June 11, 1971, now abandoned, which is a continuation of application Ser. No. 12,838, Feb. 19, 1970, now abandoned, which in turn is a continuation-in-part of application Ser. No. 823,990, May 12, 1969, now abandoned. This application June 8, 1973, Ser. No. 368,383
Int. Cl. C10m *1/26, 1/36*
U.S. Cl. 252—51.5 A **18 Claims**

Ester-containing compositions prepared by reacting a high molecular weight carboxylic acid acylating agent with polyoxyalkylene alcohol demulsifiers for aqueous emulsions. The ester-containing compositions are useful as additives in normally liquid fuels and lubricants.

3,836,471

LUBRICANTS AND FUELS CONTAINING ESTER-CONTAINING COMPOSITIONS

Clark Ober Miller, Willoughby Hills, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Continuation-in-part of application Ser. No. 360,207, May 14, 1973, which is a continuation of application Ser. No. 152,424, June 11, 1971, now abandoned, which is a division of application Ser. No. 12,838, Feb. 19, 1970, now abandoned, which in turn is a continuation-in-part of application Ser. No. 823,990, May 12, 1969, now abandoned. This application June 12, 1973, Ser. No. 369,384

Int. Cl. C10m *1/34, 1/36*

U.S. Cl. 252—51.5 A 16 Claims

Ester-containing compositions prepared by reacting a high molecular weight carboxylic acid acylating agent with polyoxyalkylene alcohol demulsifiers for aqueous emulsions. The ester-containing compositions are useful as additives in normally liquid fuels and lubricants.

3,836,472

METHOD FOR PRODUCING MANGANESE-ZINC FERRITE

Shigeo Soejima, Nagoya, and Hideo Irokawa, Chiryu, Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

No Drawing. Filed Dec. 4, 1972, Ser. No. 311,621

Claims priority, application Japan, Dec. 14, 1971, 46/100,626; Sept. 21, 1972, 47/94,116

Int. Cl. C04b *35/38, 35/40*

U.S. Cl. 252—62.57 3 Claims

Manganese-zinc ferrite for a magnetic head which has a high initial permeability and causes few ferrite noise and improves the resistance to the dropping out of ferrite crystallites generated by the rubbing of a magnetic tape, is produced by adding 0.001–0.06% by weight of at least one of alkali metal oxides selected from the group consisting of sodium oxide and potassium oxide, 0.005–0.04% by weight of rare earth metal oxides and 0.6–3.0% by weight of indium oxide to the starting materials of ferrite consisting mainly of ferric oxide, manganese oxide and zinc oxide, molding the resulting mixture, firing the molded body at a temperature of 1,100–1,300° C. under atmosphere of a reduced pressure of lower than 10^{-2} mm. Hg, firing the thus treated molded body at a temperature of 1,250–1,500° C. under a helium atmosphere containing 0.5–20% by volume of oxygen and cooling the sintered body.

3,836,473

ETCHING SOLUTION

Christopher John Kay, Nottingham, and Eric Anthony Horbury, Quorn, England, assignors to Rolls-Royce (1971) Limited, London, England

No Drawing. Filed Sept. 12, 1972, Ser. No. 288,309

Claims priority, application Great Britain, Sept. 21, 1971, 43,865/71

Int. Cl. C09k *3/00;* C23f *1/02*

U.S. Cl. 252—79.2 1 Claim

When certain masked alloys are chemically etched, an undesirable effect commonly referred to as "channelling" is often encountered. "Channelling" is characterised by an area of increased attack in the immediate vicinity of the boundary between the masked and exposed areas of the alloy. The present invention relates to an etching solution comprising a dispersion of finely divided particles which minimises this effect.

3,836,474

NOVEL NON-FLAMMABLE AZEOTROPE SOLVENT COMPOSITIONS

Oliver A. Barton, Florham Park, and Kevin P. Murphy, Orchard, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 77,388, Oct. 1, 1970, now Patent No. 3,692,686. This application July 10, 1972, Ser. No. 270,136

The portion of the term of the patent subsequent to Sept. 19, 1989, has been disclaimed

Int. Cl. C11d *7/50*

U.S. Cl. 252—171 4 Claims

Tetrachlorodifluoroethane (sym.-, asym.-, and mixtures thereof) nitromethane, water and isopropanol or secondary butanol form quaternary azeotropic mixtures which are useful as dry cleaning solvents and are particularly useful for the removal of hard-to-remove stains from leather.

3,836,475

AQUEOUS CHLORITE BLEACH CONTAINING A HYDROXYLAMMONIUM ACTIVATOR

Uwe Kirner, Bobenheim-Roxheim, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed July 10, 1972, Ser. No. 270,435

Int. Cl. C11d *7/54*

U.S. Cl. 252—187 R 7 Claims

Bleach liquors intended for use on cellulosic textile materials and containing alkali metal chlorite and, as activator, hydroxylammonium salts. The liquors are unaffected by differences in pH.

3,836,476

SIMULTANEOUS RECOVERY OF VANADIUM AND URANIUM FROM OXIDIZED WET PROCESS ACID

Roger A. Baldwin, Oklahoma City, Paul D. Bowerman, Edmond, and Michael F. Lucid, Oklahoma City, Okla., assignors to Kerr-McGee Chemical Corp., Oklahoma City, Okla.

No Drawing. Filed Oct. 4, 1971, Ser. No. 186,418

Int. Cl. B01d *11/00;* C01g *56/00*

U.S. Cl. 252—301.1 R 9 Claims

A process for the simultaneous coextraction of uranium and vanadium from an aqueous acidic solution containing the same, comprising contacting said aqueous solution with an organic phase comprising a mixture of a dialkyl phosphoric acid, a trialkylphosphine oxide compound, and an organic diluent whereby the uranium and vanadium are coextracted into the organic phase and separating said uranium-vanadium loaded organic phase.

3,836,477

STRONTIUM ALUMINATE PHOSPHOR ACTIVATED BY CERIUM AND MANGANESE

Costas C. Lagos, Danvers, Mass., assignor to GTE Sylvania Incorporated

No Drawing. Filed Nov. 15, 1972, Ser. No. 306,931

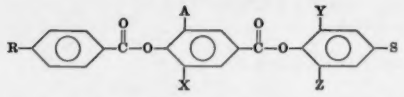
Int. Cl. C09k *1/68*

U.S. Cl. 252—301.4 F 1 Claim

A phosphor having the formula $SrAl_{12}O_{19}$:Ce,Mn has intense green emission with narrow band width under ultraviolet radiation. Substitution of 0.3 to about 0.75 moles of Si^{+++} for Al^{+3} results in an increase in emission intensity.

3,836,478
NEMATIC MATERIALS
Dennis Clinton Green, Peekskill, and William Robert Young, Millwood, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
No Drawing. Filed Oct. 24, 1972, Ser. No. 299,991
Int. Cl. C07c *69/76*
U.S. Cl. 252—408 18 Claims

Novel nematic liquid crystals and the method of their preparation are described. These materials have a positive dielectric anisotropy, are operatively nematic over a wide range of temperatures which encompasses room temperature, are colorless, and have desirably high stabilities with respect to air, moisture, electric fields, and visible and ultraviolet light. The novel materials are represented by the following general structural formula



wherein R is a radical selected from the group consisting of alkyl radicals containing from 1 to 12 carbon atoms, alkoxy radicals containing from 1–8 carbon atoms, alkanoyloxy radicals containing from 1–8 carbon atoms, and alkoxycarbonyloxy radicals containing from 1–6 carbon atoms, S is a radical selected from the group consisting of alkyl radicals containing from 1 to 12 carbon atoms and alkoxy radicals containing from 1 to 8 carbon atoms, and A, X, Y and Z are radicals selected from the group consisting of hydrogen and methyl radicals, at least one of the A, X, Y and Z radicals in a compound being methyl radical. The materials can be used singly or in various mixtures to produce desired operating temperatures.

3,836,479
SHAPED HYDROFLUORINATION CATALYST AND PROCESS OF MAKING THE SAME
Heinrich Paucksch and Joachim Massonne, Hannover, and Helmuth Derleth, Sarstedt, Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany
No Drawing. Filed Feb. 2, 1972, Ser. No. 223,006
Claims priority, application Germany, Feb. 8, 1971, P 21 05 748.7
Int. Cl. B01j *11/78*
U.S. Cl. 252—433 7 Claims

A shaped catalyst body for hydrofluorination comprising a hydrofluorinated body composed of a mixture of aluminum oxide hydrate or aluminum hydroxide with 2 to 60% by weight of boron trioxide relative to the starting mixture.

The catalyst body is made by forming the mixture of the above materials, softening the mixture to a degree that it can be shaped, shaping it and then drying the shaped body at a temperature between 120–200° C. followed by activating the catalyst with hydrogen fluoride at a temperature between 200–500° C.

The catalyst is used in the hydrofluorination of acetylene, halogenated olefins and similar compounds.

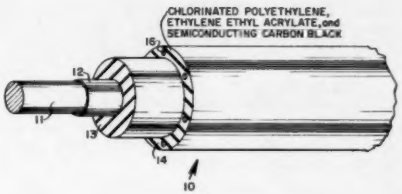
3,836,480
CONVERSION OF OLEFINS
Robert E. Reusser, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Application Jan. 12, 1970, Ser. No. 1,969, now Patent No. 3,660,507, which is a continuation of abandoned application Ser. No. 627,669, Apr. 3, 1967. Divided and this application Nov. 8, 1971, Ser. No. 196,786
Int. Cl. B01j *11/74*
U.S. Cl. 252—439 5 Claims

A composition active for the conversion of olefins comprising a disproportionation catalyst and magnesium oxide which has been treated with carbon monoxide, nitric oxide or hydrogen.

3,836,481
CATALYST COMPOSITION OF ETHYLENE TO ETHYLENE OXIDE
Tsunesuke Kajimoto and Shigeru Wakamatsu, Kamakura, Japan, assignors to Toray Industries, Inc., Tokyo, Japan
No Drawing. Filed June 1, 1972, Ser. No. 258,522
Claims priority, application Japan, June 11, 1971, 46/41,042, 46/41,043; June 15, 1971, 46/42,206; June 16, 1971, 46/42,568; June 18, 1971, 46/43,279
Int. Cl. B01j *11/08*
U.S. Cl. 252—462 7 Claims

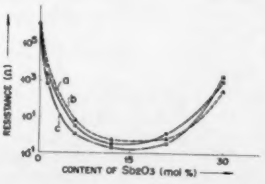
The silver catalyst compositions containing, as a promoter, at least one metal selected from the group consisting of lanthanum, praseodymium, neodymium, terbium and dysprosium give a high selectivity in the oxidation reaction of ethylene to ethylene oxide.

3,836,482
SEMICONDUCTING COMPOSITION OF CHLORINATED POLYOLEFIN, ETHYLENE ETHYL ACRYLATE AND SEMICONDUCTING CARBON BLACK
Ting H. Ling, Marion, Robert M. Wade, Wabash, and Marwick H. Solomon, Muncie, Ind., assignors to The Anaconda Company
Original application July 30, 1971, Ser. No. 167,741, now Patent No. 3,735,025. Divided and this application Feb. 15, 1973, Ser. No. 332,829
Int. Cl. H01b *1/06*
U.S. Cl. 252—511 6 Claims



Electrical cables are jacketed with a novel thermoplastic semiconducting composition comprising chlorinated polyethylene, ethylene ethyl acrylate and carbon black.

3,836,483
OXIDE VARISTOR
Noboru Ichinose, Yokohama, and Yuji Yokomizo, Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed May 24, 1972, Ser. No. 256,298
Claims priority, application Japan, May 24, 1971, 46/34,756; June 10, 1971, 46/40,563; Feb. 1, 1972, 47/10,961
Int. Cl. H01b *1/06*
U.S. Cl. 252—519 1 Claim



Oxide varistor comprising a basic composition (totaling 100 mol percent) formed of 87 to 12 mol percent of

ZnO, 1 to 30 mol percent of Sb_2O_3 and 12 to 87 mol percent of at least one metal oxide selected from the group consisting of MgO, CoO, NiO, BaO, SrO, CaO, MnO, FeO and CuO and an additive consisting of 0.5 to 10% by weight of Bi_2O_3 based on said basic composition.

3,836,484

PHOSPHATE-FREE DETERGENT CONCENTRATES CONTAINING SULFATED AND SULFONATED LINEAR ALKYLPHENOLS

Mitchell Danzik, Pinole, and Ralph House, El Sobrante, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Original application May 5, 1970, Ser. No. 34,885, now Patent No. 3,697,573. Divided and this application Apr. 1, 1971, Ser. No. 130,449

Int. Cl. C11d *1/22, 11/04*

U.S. Cl. 252—550 **2 Claims**

Detergent concentrates suitable for formulation into composition capable of heavy duty washing performance in the absence of phosphate builders are produced by sulfating and sulfonating a C_{16-24} alkyl monoalkylphenol and neutralizing the product.

3,836,485

SOLID EPOXY RESINS FROM GLYCIDYL ETHERS OF HYDROGENATED BISPHENOLS OR HYDROGENATED NOVOLACS AND AROMATIC OR CYCLOALIPHATIC DICARBOXYLIC ACIDS

Pong Su Shih, Clute, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 229,181, Feb. 24, 1972. This application June 4, 1973, Ser. No. 366,390

Int. Cl. C08g *30/10*

U.S. Cl. 260—2 EP **20 Claims**

Solid epoxy resins are prepared from diglycidyl ethers of a hydrogenated bisphenol or hydrogenated novolacs such as hydrogenated bisphenol A and an aromatic or cycloaliphatic dicarboxylic acid such as isophthalic acid. These solid resins may be comminuted into a stable free-flowing powder useful as epoxy resin powder coatings having excellent weathering properties.

3,836,486

VINYL CHLORIDE POLYMER RECOVERY PROCESS

Edwin A. Hafner, Woodbridge, Conn., assignor to Hafner Industries, Inc., Woodbridge, Conn.

Continuation-in-part of abandoned application Ser. No. 106,183, Jan. 13, 1971. This application June 19, 1972, Ser. No. 264,026

Int. Cl. C08f *29/18, 47/24*

U.S. Cl. 260—2.3 **14 Claims**

Reusable vinyl chloride polymer and copolymer and other components such as plasticizers are reclaimed from scrap plastics by contacting the scrap plastics with a solvent for the vinyl chloride polymer, contacting the resulting liquid phase with a substantially non-aqueous non-solvent for the polymeric portion, and then separating the resulting insoluble phase containing the vinyl chloride polymer. Following the removal of this polymer portion, the filtrate is fractionally distilled to recover the solvents, non-solvents, plasticizers and other ingredients. Typical solvents are methylethyl ketone, methylisobutyl ketone, cyclohexanone, dimethyl formamide, tetrahydrofuran and ethylene dichloride. Typical non-solvents are methanol, ethanol, isopropanol and n-butanol.

The recovered vinyl chloride polymer compositions may contain pigments and fillers, and exhibit improved performance on recycling in the fabrication of plastic articles.

3,836,487

HIGH IMPACT RIGID SELF-SKINNED POLYURETHANE FOAM AND METHOD

Russell P. Carter, Jr., Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 761,808, Sept. 23, 1968. This application May 24, 1971, Ser. No. 146,426

Int. Cl. C08g *22/46*

U.S. Cl. 260—2.5 AK **7 Claims**

This invention provides a method of forming a rigid polyurethane foam having a density of about 20 to 50 pounds per cubic foot and a Gardner impact of at least 1 inch pounds by reacting a mixture of a polyether glycol of about 700 to 1500 molecular weight selected from the class of polypropylene ether glycol, polypropylene ethylene ether glycol, polytetramethylene ether glycol and an organic polyisocyanate having an average NCO functionality of about 2.5 to 2.8, nut flour and a blowing agent.

3,836,488

TRIS[2-(DIMETHYLAMINO)ETHYL]AMINE AS CATALYST FOR THE PREPARATION OF POLYURETHANES

Ronnie M. Pruitt and James L. Potter, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation of abandoned application Ser. No. 78,641, Oct. 6, 1970. This application Aug. 16, 1973, Ser. No. 389,099

Int. Cl. C08g *22/44*

U.S. Cl. 260—2.5 AC **10 Claims**

Urethanes produced from isocyanate reactions with active hydrogen containing compounds are catalyzed with tris[-(dimethylamino)ethyl]amine.

3,836,489

ORGANOPOLYSILOXANE COMPOSITIONS

Michel Bargain, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Feb. 20, 1973, Ser. No. 333,449

Claims priority, application France, Feb. 21, 1972, 7205745

Int. Cl. C08f *19/14*

U.S. Cl. 260—18 S **14 Claims**

An organopolysiloxane composition convertible on curing to an elastomer with good heat and fire resistance, comprising an organopolysiloxane rubber, a silica filler, an organic peroxide, a platinum additive, pyrogenic titanium dioxide and 0.01 to 2 parts (per 100 parts of rubber) of zinc oxide, aluminium oxide, magnesium oxide or stannic oxide.

3,836,490

FLAMEPROOF POLYCARBONATES CONTAINING AN ALKALI METAL SALT SOLUBLE IN THE POLYCARBONATE MELT

August Bockmann, Hans Rudolph, and Werner Nouvertne, Krefeld-Bockum, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of abandoned application Ser. No. 186,391, Oct. 4, 1971. This application July 20, 1973, Ser. No. 381,101

Claims priority, application Germany, Oct. 8, 1970, P 20 49 358.7; Mar. 17, 1971, P 21 12 987.3

Int. Cl. C08g *51/62*

U.S. Cl. 260—18 TN 6 Claims

High molecular weight thermoplastic polycarbonates of low inflammability are provided which contain alkali salts soluble in the polycarbonate melt in amounts of from about.0.2% by weight to about 0.00005% by weight based on the weight of the polycarbonate.

3,836,491

NOVEL COMPOSITIONS COMPRISING POLYISOCYANATES AND HYDROXYBENZOIC ACID CAPPED POLYMERS CURABLE WITH TERTIARY AMINES AND PROCESS OF CURING SAME

David D. Taft, Minneapolis, and Roger A. Schmidt, Burnesville, Minn., assignors to Ashland Oil Inc., Houston, Tex.

No Drawing. Continuation of abandoned application Ser. No. 109,985, Jan. 26, 1971. This application Jan. 31, 1973, Ser. No. 328,161

The portion of the term of the patent subsequent to Jan. 29, 1990, has been disclaimed

Int. Cl. C08g *33/10*

U.S. Cl. 260—22 TN 21 Claims

A novel and improved composition formed by cross-linking an hydroxybenzoic acid capped prepolymer with a polyisocyanate in the presence of a tertiary amine, said composition being rapidly curable to essentially its desired final state at room temperature.

3,836,492

POLYMERIZABLE UNSATURATED REACTION PRODUCT OF A DIISOCYANATE AND AN UNSATURATED PRODUCT OF A DICARBOXYLIC ACID ANHYDRIDE AND AN UNSATURATED MONOGLYCIDYL MONOMER

Tadashi Watanabe, Kouichiro Murata, and Kenjiro Tsubouchi, Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Amagasaki-shi, Japan

No Drawing. Continuation-in-part of application Ser. No. 255,650, May 22, 1972, which is a continuation-in-part of application Ser. No. 210,155, Dec. 20, 1971, both now abandoned. This application Dec. 14, 1973, Ser. No. 424,747

Claims priority, application Japan, Dec. 24, 1970, 45/117,266

Int. Cl. C08g *22/04*

U.S. Cl. 260—23 TN 12 Claims

Polymerizable unsaturated and urethanated compounds useful for coating compositions whereby said polymerizable unsaturated and urethanated compounds are obtained by reacting diisocyanate compounds with reaction products which are obtained by reacting dicarboxylic compounds with polymerizable unsaturated monoglycidyl monomers. The hardened materials obtained from said polymerizable unsaturated and urethanated compounds are excellent in their chemical and mechanical properties.

3,836,493

AQUEOUS DISPERSIONS OF EPICHLORHYDRIN MODIFIED POLYURETHANE PREPOLYMER-POLYAMINE PRODUCT

Kazuo Matsuda, Wakayama, Yoshiaki Tanaka, Osaka, and Hirakazu Aritaki, Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed Mar. 9, 1972, Ser. No. 233,304

Claims priority, application Japan, Mar. 16, 1971, 46/14,577

Int. Cl. C08g *22/14, 51/24*

U.S. Cl. 260—29.2 TN 4 Claims

Liquid, thermosetting resin compositions are prepared by reacting a urethane prepolymer containing terminal isocyanate groups with an excess amount of a polyalkylenepolyamine to form polyurethaneureapolyamine, then reacting same with epichlorohydrin and finally mixing the product with an aqueous acid solution.

3,836,494

METAL COATING COMPOSITIONS PREPARED FROM AQUEOUS DISPERSIONS OF IONOMER AND URON RESINS

Ihab M. Hekal, Downers Grove, and Raymond G. Chelton, Chicago, Ill., assignors to Continental Can Company, Inc., New York, N.Y.

No Drawing. Filed July 17, 1972, Ser. No. 272,268

Int. Cl. C08g *51/24*

U.S. Cl. 260—29.44 A 8 Claims

Metal surfaces are coated with an aqueous dispersion containing a water dispersible ionomer resin and a heat-curable, thermosetting uron resin.

3,836,495

AQUEOUS EMULSION PAINTS AND PIGMENT BASES THEREFOR

Gregor Berstein, Newton, Mass., assignor to Cabot Corporation, Boston, Mass.

No Drawing. Continuation-in-part of application Ser. No. 34,529, May 4, 1970, now Patent No. 3,737,404. This application Mar. 21, 1973, Ser. No. 343,497

Int. Cl. C08g *51/24*

U.S. Cl. 260—29.4 UA 7 Claims

Improved aqueous emulsion type paints and pigment bases therefor are described in which the principal opacifying pigment is a rutile titania pigment and there is also incorporated therewith per 100 parts of said rutile titania pigment between about 2 and about 20 parts by weight of a substantially water-insoluble, high molecular weight, cross-linked urea-formaldehyde resin in highly dispersed particulate form. Said particulate urea-formaldehyde resin is characterized by a BET specific surface area of between about 15 and aout 100 square meters per gram and preferably has a volatile content of not over about 15% by weight.

3,836,496

COMPOSITION FOR IMPARTING NON-PERMANENT SOIL-RELEASE CHARACTERISTICS COMPRISING AN AQUEOUS ACIDIC SOLUTION OF POLYCARBOXYLATE POLYMER

Robert E. Dickson, Belle Mead, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed May 1, 1972, Ser. No. 249,089

Int. Cl. D06m *15/14*

U.S. Cl. 260—29.6 H 7 Claims

A composition for applying a non-permanent soil-release finish to fabrics comprising a mixture of a polycar-

boxylate polymer having an acid equivalent weight from about 110 to 175, and a mineral acid. A preferred carboxylate polymer is a copolymer of ⅔ methacrylic acid and ⅓ ethyl methacrylate. The composition is particularly useful for applying a soil-release finish in the rinse cycle of a home laundry process.

3,836,497

PROCESS FOR THE PRODUCTION OF HIGH SURFACE TENSION SPECK-FREE, HEAT-POLYMERIZED SYNTHETIC RESIN DISPERSIONS

Ulrich Turck, Marl, Germany, assignor to Chemische Werke Huels, A.G., Marl, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 130,012, Mar. 31, 1971. This application Mar. 21, 1973, Ser. No. 343,448

Claims priority, application Germany, Apr. 2, 1970, P 20 15 660.9

Int. Cl. C08d *7/18;* **C08f** *37/00, 45/54*

U.S. Cl. 260—29.7 SQ **12 Claims**

Speck-free high surface tension dispersions of emulsion polymerized styrene-butadiene copolymers and other heat-polymerized synthetic resins containing a plasticizing component and a hardening component are produced by employing as the emulsifier for the polymerization 0.3–4% by weight of the monomers of a salt of an α-sulfo-straight chain alkanoic acid containing 10–20 carbon atoms or of an ester thereof with an alcohol containing 1–3 carbon atoms.

3,836,498

POLYAMIDES AND THEIR ANISOTROPIC DOPES

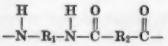
Leslie W. Gulrich, Jr., Wilmington, Del., and Paul Winthrop Morgan, West Chester, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 27, 1972, Ser. No. 301,290

Int. Cl. C08g *20/00, 51/46*

U.S. Cl. 260—30.8 R **4 Claims**

Novel film- and fiber-forming aromatic polyamides and copolyamides consisting essentially of repeating units of the formula



wherein R_1 represents at least one radical selected from the group of 1,4-phenylene; methyl-, chloro-, bromo- and fluoro-1,4-phenylene; 4,4′ - biphenylene; 3,3′-dichloro-4,4′-biphenylene; 3,3′-dimethoxy - 4,4′ - biphenylene; 3,3′-dimethyl - 4,4′ - biphenylene; *trans*-1,4-cyclohexylene; 4,4′ - carbonamidobiphenylene; and 1,4-phenylene bis-(iminocarbonyl)-1,4-phenylene; and R_2 represents 2,5-pyridylene or 4-methyl-2,5-pyridylene radicals, of which 0 to about 50 mole percent may be rep'aced by radicals selected from the group of 1,4-phenylene, chloro-1,4-phenylene, and 4,4′-biphenylene. These polymers form useful anisotropic spinning dopes with concentrated sulfuric acid.

3,836,499

THERMOPLASTIC MOULDING COMPOSITION AND MOULDINGS OF POLYCARBONATE, HAVING IMPROVED EASE OF MOULD RELEASE WHEN INJECTION MOULDING

Hermann Schirmer and Gunter Peilstocker, Krefeld-Bockum, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Jan. 8, 1973, Ser. No. 321,594

Claims priority, application Germany, Apr. 25, 1972, P 22 20 185.0

Int. Cl. C08g *51/36*

U.S. Cl. 260—31.2 R **8 Claims**

The invention relates to thermoplastic moulding compositions made of polycarbonates based on aromatic bishydroxy compounds which may contain fillers, dyestuffs, pigments, stabilisers and/or glass fibres, characterised in that they contain 0.1 to 2% by weight, relative to polycarbonate, of one or several esters of saturated aliphatic long-chain monocarboxylic acids and univalent aliphatic long-chain alcohols.

3,836,500

SOLUTIONS OF POLYBENZIMIDAZOLES YIELDING SHAPED POLYBENZIMIDAZOLE ARTICLES HAVING IMPROVED COLOR STABILITY

Gordon W. Calundann, North Plainfield, and George R. Ferment, Dover, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Jan. 26, 1973, Ser. No. 327,050

Int. Cl. C08f *45/44*

U.S. Cl. 260—32.6 N **8 Claims**

Polybenzimidazole shaped articles such as yarns, fibers, films or the like have a tendency to darken by an unknown mechanism which may include polymer photodegradability by exposure to sunlight or reaction with amine end groups on the polymer. The color stability of polybenzimidazole articles can be improved by incorporating into the solutions utilized to form the articles an amount effective to stabilize the color of the resulting polybenzimidazole articles of an amine blocking, color stabilizing reagent (such as carboxylic acid anhydrides and carboxylic acid halides) without determentally affecting the solubility of the polybenzimidazole in the solvent. Acetic anhydride is the preferred amine blocking, color stabilizing reagent.

3,836,501

SELF-EXTINGUISHING POLYAMIDE MOULDING COMPOSITIONS

Peter Tacke and Heinrich Haupt, Krefeld, Heinz Ulrich Blank, Cologne, and August Böckmann and Hans Rudolph, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Jan. 26, 1973, Ser. No. 327,110

Claims priority, application Germany, Jan. 27, 1972, P 22 03 704.3; Mar. 22, 1972, P 22 13 801.8

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 N **4 Claims**

Permanently self-extinguishing polyamide moulding compositions containing from 6 to 30% by weight of an oligomeric or polymeric halogen-containing compound which has a halogen content of from 10 to 80% by weight.

3,836,502

PAINTABLE SILICONE ELASTOMER

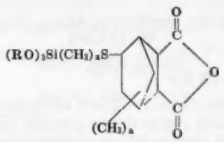
Jay R. Schulz, Bangor Township, Bay County, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Feb. 16, 1973, Ser. No. 333,240

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 SB **11 Claims**

Mixing a hydroxyl endblocked polydimethylsiloxane, a filter, an alkoxy silicon compound, such as n-propyl-orthosilicate,



and a metal carboxylate provides a room temperature vulcanizable silicone elastomer composition which cures to provide an elastomer whose surface can be painted with either a latex base paint or an oil base paint.

3,836,503

SILICONE ELASTOMERS WHICH ARE PAINTABLE

Jay R. Schulz, Bangor Township, Bay County, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Feb. 20, 1973, Ser. No. 333,846

Int. Cl. C08g 51/04

U.S. Cl. 260—37 SB 11 Claims

Mixing a hydroxyl endblocked polydimethylsiloxane, a filler, an alkoxy silicon compound, such as, n-propylorthosilicate,

$$(RO)_3Si(CH_2)_xSCH{=}CHC_6H_5$$

and a metal carboxylate provides a room temperature vulcanizable silicone elastomer composition which cures to provide an elastomer whose surface can be painted with either a latex base paint or an oil base paint.

3,836,504

PROCESS FOR PREPARING SHAPED PRODUCT MADE OF INORGANIC-ORGANIC COMPOSITE MATERIAL

Takao Morisawa, Yokkaichi, Japan, assignor to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

No Drawing. Filed Mar. 6, 1972, Ser. No. 232,274

Claims priority, application Japan, Mar. 6, 1971, 46/12,031

Int. Cl. C08f 45/04

U.S. Cl. 260—42.55 8 Claims

A shaped article formed from an inorganic-organic composite is prepared by admixing an inorganic powder, wherein at least 10% by volume of said powder has a particulate diameter of less than 100μ, with 0.3–20% by weight of an aqueous emulsion of either a non-crystalline synthetic resin characterized by a deformation temperature of higher than room temperature or of a crystalline synthetic resin characterized by a melting point of higher than room temperature; shaping said mixture and heating to at least the deformation or melting temperature of said synthetic resin and thereafter cooling.

3,836,505

9-CARBOXYLIC NAPHTHOXAZOLES AND PLASTICS BRIGHTENED THEREWITH

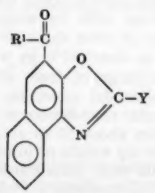
Bennett George Buell, Bound Brook, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application June 11, 1970, Ser. No. 45,595, now Patent No. 3,717,652. Divided and this application Nov. 13, 1972, Ser. No. 305,771

Int. Cl. C08f 45/67; C08g 51/67

U.S. Cl. 260—45.8 N 4 Claims

Naphthoxazoles characterized by the presence of a carboxylic function at the 9-position are provided. They are improved mass brighteners for molded plastics, particularly polyesters, since they absorb strongly in the UV region of 370–400 nanometers and do not sublime or mark off at high molding temperatures. They correspond to the formula



in which R^1 is the hydroxyl radical, or, a monovalent dehydro radical of an alcohol, a phenol, a primary amine or a secondary amine, said monovalent radical containing about 1–8 carbon atoms, and Y is a 2-naphthoxazolyl, or a 2-naphthoxazolylphenyl having a carboxylic acid function at the 9-position, a stilbyl, a 2-benztriazolylphenyl or a 2-naphthtriazolylphenyl radical, or a styryl, 4-cyanostyryl or 4-carboxystyryl radical.

3,836,506

COMPOSITIONS OF CYANOIMIDE POLYMERS AND HETEROCYCLIC POLYMERS MADE FROM CYANOIMIDE PRECURSORS

Lawrence W. Frost, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,771

Int. Cl. C08g 20/32

U.S. Cl. 260—47 CP 7 Claims

Deep curable polymers having heterocyclic ring systems such as isoindoloquinazolinedione ring systems prepared from novel cyanoimide polymers, most desirably 2′-cyanoimide polymers. Preferably the cyanoimide polymers are prepared from a diamine having at least one nitrile group in the two position to an amine group and a dianhydride having at least two cyclic anhydride groups. Copolymers may be prepared having other linkages, notably imide linkages, in addition to isoindoloquinazolinedione ring systems and/or other similar heterocyclic ring systems. The copolymers can be prepared by use of diamines containing one or more cyanoimide groupings and/or imide groups in their structure.

3,836,507

FLAME RESISTANT FINISH OF COMBUSTIBLE MATERIALS PREPARED FROM PHOSPHOROUS COMPOUNDS, ALDEHYDES AND KETONES

Masao Yoshizawa, Omiya, Takeo Mikami, Kawagoe, and Nobuo Kobayashi and Akira Iida, Mikawamachi, Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo, and The Dainippon Ink Institute of Chemical Research, Saitama Pref., Japan

No Drawing. Original application Aug. 21, 1970, Ser. No. 66,153, now Patent No. 3,760,037. Divided and this application Jan. 30, 1973, Ser. No. 328,151

Claims priority, application Japan, Aug. 25, 1969, 44/66,501

Int. Cl. C07f 9/40; D06c 27/00

U.S. Cl. 260—64 8 Claims

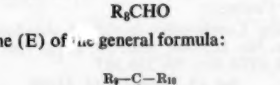
Phosphorus-containing oligomers or polymers useful as flame-resistant substances are obtained by reacting a tertiary phosphite (A) of the general formula:

$$(R_1O)_3P, \qquad (A)$$

a dialkyl phosphite halogenide (B) of the general formula:

$$(R_2O)_2PX, \qquad (B)$$

a cyclic halogenophosphite (C) of the general formula:



an aldehyde (D) of the general formula:

$$R_8CHO \qquad (D)$$

and a ketone (E) of the general formula:

(E)

wherein R_9 to R_{10} and X are as defined.

3,836,508

SULFOBENZYLMALONIC ACID MODIFIED TEREPHTHALIC ACID POLYESTERS

Eduard Radlmann and Günther Nischk, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 18, 1973, Ser. No. 361,524

Claims priority, application Germany, May 20, 1972, P 22 24 831.3

Int. Cl. C08g *17/08*

U.S. Cl. 260—75 S **6 Claims**

Acid modified terephthalic acid polyesters containing structural elements of sulfonatobenzyl malonic acid. The polyesters are easily dyeable with basic dyestuffs and can be spun from the melt into filaments.

3,836,509

RADIATION CONVERTIBLE NORBORNENE POLYMERS

Henry Octave Colomb, Jr., and David John Trecker, South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Application Sept. 15, 1970, Ser. No. 72,543, now Patent No. 3,715,242, which is a division of application Ser. No. 804,279, Mar. 4, 1969, now Patent No. 3,554,886, which in turn is a continuation-in-part of abandoned application Ser. No. 697,635, Jan. 15, 1968. Divided and this application May 22, 1972, Ser. No. 255,458

Int. Cl. C08g *22/04*

U.S. Cl. 260—77.5 BB **5 Claims**

Radiation curable polymers having the vinyl N-(5-norbornen-2-ylmethyl)carbamate group polymerized therein are useful for the production of crosslinked coatings, films, wire insulation and fabric treatment.

3,836,510

VINYL HALIDE TERPOLYMER AND BULK PROCESS FOR PREPARATION

Akio Takahashi, Amherst, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Dec. 27, 1972, Ser. No. 319,076

Int. Cl. C08f *15/40*

U.S. Cl. 260—78.5 R **7 Claims**

An improved polyvinyl halide terpolymer containing up to 20 percent of a vinyl monomer such as a vinyl ester monomer in combination with maleic or itaconic anhydride can be obtained by polymerizing the monomers in a process of bulk polymerization comprising a single stage or two-stage polymerization process wherein high speed agitation is used during the first stage and low speed agitation is used in the second stage. The products of the process are characterized by improved processability, increased solubility in organic solvents and reduced particle size. The products of the invention are more readily processable without decomposition by thermal means. Additionally, cross-linked rigid products can be easily obtained through reaction of the anhydride group in the product with such cross-linking agents as polyfunctional alcohols, amines, epoxides and isocyanates.

3,836,511

PROCESS FOR SULFONATING UNSATURATED ELASTOMERS

Charles P. O'Farrell, Clark, and George E. Serniuk, Roselle, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 123,908, Mar. 12, 1971. This application Mar. 29, 1972, Ser. No. 239,307

Int. Cl. C08d *11/02, 13/30*

U.S. Cl. 260—79.3 R **10 Claims**

A process for sulfonating unsaturated elastomers which comprises sulfonating an olefinically unsaturated elastomer using as the sulfonating agent an acyl sulfate. The products produced thereby have improved properties over those sulfonated elastomers prepared by prior art methods. The preferred acyl sulfate is acetyl sulfate. The sulfonated elastomers of this invention are useful as films, adhesives and for other general purpose rubber uses. Especially advantageous properties are obtained when the sulfonic acid polymer is neutralized with ethylamine.

3,836,512

COPOLYMERIZATION OF OLEFINICALLY UNSATURATED MONOMERS

Nan S. Chu, Hartsdale, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 82,843, Oct. 21, 1970. This application Aug. 15, 1972, Ser. No. 280,882

Int. Cl. C08f *1/62*

U.S. Cl. 260—80.73 **8 Claims**

Homogeneous copolymerization of water soluble and water insoluble olefinically unsaturated monomers has been effected by their aqueous polymerization in the presence of a dispersing agent, a redox catalyst system, a liquid hydrocarbon, an emulsifier and optionally a crosslinking agent and electrolyte.

3,836,513

POLYMERIZATION OF CONJUGATED DIOLEFINS WITH ALFIN CATALYST AND MOLECULAR WEIGHT CONTROLLER

James B. Pyke, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed June 11, 1970, Ser. No. 45,544

Int. Cl. C08d *1/32, 3/06;* **C08f** *19/08*

U.S. Cl. 260—82.1 **10 Claims**

In a process for preparing a polymer of a conjugated diolefinic compound in the presence of an alfin catalyst consisting of an alkali metal halide, a sodium alkoxide and a sodium alkenyl compound, the improvement comprising polymerizing the conjugated diolefinic compound in the presence of at least one unsaturated organic halide to control the molecular weight of the polymer is disclosed.

3,836,514

SYNTHETIC RESIN BINDER COMPOSITIONS

Michael R. Fechillas, New Brunswick, N.J., assignor to Johnson & Johnson

Original application Nov. 3, 1971, Ser. No. 195,373, now Patent No. 3,732,139, dated May 8, 1973. Divided and this application Nov. 30, 1972, Ser. No. 311,036

Int. Cl. C08f *3/64, 15/16*

U.S. Cl. 260—86.1 E **5 Claims**

Synthetic resin binder compositions which comprise from about 10% to about 50% by weight of a polymodal molecular weight distribution synthetic acrylic ester resin in which (1) one mode or peak is present in the molecular weight range of from about 300 to about 2000 and another mode or peak is present in the molecular weight range of from about 4000 to about 600,000 and (2) from about 10% to about 40% by weight has a molecular weight in the range of from about 300 to about 2000 and from about 90% to about 60% by weight has a molecular weight in the range of from about 4000 to about 600,000 said polymodal molecular weight distribution synthetic acrylic ester resin having a swell index in tetrahydrofuran of from about 50 to about 200, from about 50% to about 90% by weight of insolubles in tetrahydrofuran, and a second order glass transition temperature of from about −40° C. to about +5° C.

3,836,515
PROCESS FOR PREPARING SOLID TELOMERS AND COTELOMERS

Emil Trebillon, Neuilly-sur-Seine, and Georges Wetroff, Le Thillay, France, assignors to Rhone-Progil, Paris, France

No Drawing. Filed Mar. 23, 1972, Ser. No. 237,559
Claims priority, application France, Mar. 31, 1971, 7111327
Int. Cl. C08f *1/66*
U.S. Cl. 260—87.5 R **5 Claims**

The preparation of solid telomers and cotelomers by heating a mixture of vinyl chloride or comonomers containing at least 30% by weight vinyl chloride, and at least one halogenated organic derivative having a mobile halogen, in the presence of a catalyst selected from the group consisting of magnesium, barium, chromium, nickel, zinc, mercury, silicon, tin and lead, and a polar solvent which is at least partially miscible with the halogenated organic derivative/monomer mixture.

3,836,516
DIAZO DERIVATIVES OF ANTIBIOTIC X-537A

Arthur Stempel, Teaneck, and John Westley, Mountain Lakes, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Aug. 18, 1969, Ser. No. 851,044, now Patent No. 3,715,372. Divided and this application Oct. 24, 1972, Ser. No. 300,091
Int. Cl. A23k *1/17;* **A61k** *21/00;* **C07c** *113/04*
U.S. Cl. 260—141 **2 Claims**

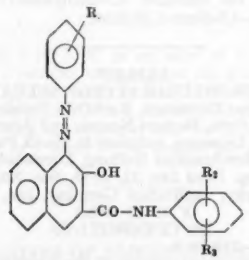
Derivatives of antibiotic X-537A formed by modification of the carboxyl and phenolic groups, substitution at the 5-position of the aromatic ring and reduction or oximation of the ketone are described. These derivatives are useful as coccidiostatic agents and antibacterial agents.

3,836,517
WATER-INSOLUBLE DISPERSE AZO DYESTUFFS OF CYCLIC AMINOBENZALDEHYDE ACETALS

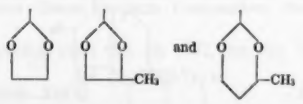
Richard C. Wilkinson, Warwick, R.I., and Hermann Hoffmann, Charles City, Iowa, assignors to American Hoechst Corporation, Coventry, R.I.

No Drawing. Filed July 1, 1971, Ser. No. 159,064
Int. Cl. C09b *29/34, 29/36*
U.S. Cl. 260—152 **2 Claims**

An azo dyestuff of the formula



wherein R_1 represents a member selected from the group



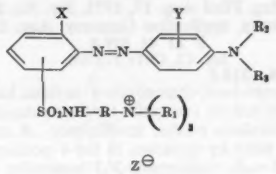
and R_2 and R_3 each represent a member selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, chlorine and nitro. The azo dyestuff has improved light fastness characteristics.

3,836,518
CATIONIC AZO DYES FROM AMINOHALOBENZENESULFONAMIDES

Gary T. Clark, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Mar. 9, 1972, Ser. No. 233,299
Int. Cl. C09b *29/36;* **D06p** *3/00*
U.S. Cl. 260—152 **9 Claims**

Novel compounds of the formula



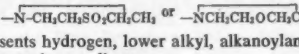
wherein

R represents lower alkylene;

R_1 represents lower alkyl, benzyl, or any equivalents thereof, and each R_1 may be the same or different;

R_2 and R_3 may be the same or different and each represents hydrogen, cycloalkyl, phenyl, benzyl, benzyl substituted with lower alkoxycarbonyl, lower alkyl or lower alkyl substituted with halogen, hydroxy, lower alkoxy, acyloxy, alkanoylamido, carbamoyl, succinimido, phthalimido, or

R_2 and R_3 with the nitrogen atom to which they are bonded may be combined to represent



Y represents hydrogen, lower alkyl, alkanoylamido, benzamido, or lower alkoxy;

X represents halogen; and

Z represents a basic dye anion.

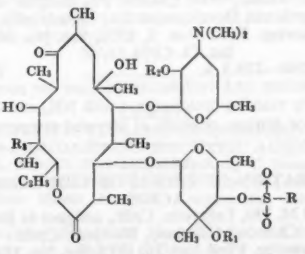
These dyes impart fast yellow to red shades to acrylic, modacrylic, acid-modified polyester and acid-modified polyamide fibers.

3,836,519
SULFONYL DERIVATIVES OF ERYTHROMYCIN

Robert Hallas and Jerry Roy Martin, Waukegan, and John Soloman Tadanier, Chicago, Ill., assignors to Abbott Laboratories, Chicago, Ill.

No Drawing. Filed May 4, 1973, Ser. No. 357,121
Int. Cl. C07c *129/18*
U.S. Cl. 260—210 E **7 Claims**

Covers sulfonyl derivatives of erythromycin A, B and C falling within the following structural formula:



where R is selected from the group consisting of loweralkyl, loweralkenyl, aryl, substituted aryl, benzyl, substituted benzyl, aroxyalkyl, and substituted aroxyalkyl;

R_1 is hydrogen or methyl; R_2 is hydrogen or lower-alkanoyl and R_3 is hydrogen or hydroxyl said erythromycin derivatives being useful for their antibiotic activity.

3,836,520
DIGITOXIGENIN-3-α,L-RHAMNOSIDO-4'-ACYLATES
Ulrich Stache and Werner Haede, Hofheim, Taunus, Werner Fritsch, Neuenhain, Taunus, Kurt Radscheit, Kelkheim, Taunus, and Ernst Lindner, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Aug. 17, 1972, Ser. No. 281,557
Claims priority, application Germany, Aug. 19, 1971, P 21 41 599.6
Int. Cl. C07c *173/00*
U.S. Cl. 260—210.5 **3 Claims**

Digitoxigenin-3-α,L-rhamnosido-4'-acylates having positive inotropic activity and useful for the treatment of heart disease, particularly cardiac insufficiency . A method for making the same by acylation, in the 4'-position, of digitoxigenin - 3 - α,L - rhamnosido-2',3'-acetonides or -2',3'-orthocarbonates.

3,836,521
2-LOWER ALKYLTHIO-1H-1,4-BENZODIAZEPINES
James Valentine Earley, Cedar Grove, Rodney Ian Fryer, North Caldwell, and Armin Walser, West Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Filed Oct. 8, 1971, Ser. No. 187,836
Int. Cl. C07d *53/06*
U.S. Cl. 260—239 BD **7 Claims**

Novel 1H - 1,4 - benzodiazepine derivatives bearing a lower alkylthio substituent in the 2-position are disclosed. These 2-lower alkylthio-1H-1,4-benzodiazepines are useful as muscle-relaxant, anti-convulsant and sedative agents.

3,836,522
PROCESS FOR THE MANUFACTURE OF 1,3-DIPHENYL-4-METHYL-5-ALKYL-PYRAZOLINES
Tibor Somlo, Birsfelden, and Mauro Stagi, Allschwil, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Filed Apr. 5, 1972, Ser. No. 241,379
Claims priority, application Switzerland, Apr. 19, 1971, 5,631/71
Int. Cl. C07d *49/10*
U.S. Cl. 260—239.9 **5 Claims**

The present invention relates to 1,3-diphenyl-4-methyl-5-alkyl pyrazolines which are useful as optical brighteners for high molecular organic materials. The new compounds may be prepared by a new and inventive process.

3,836,523
ONE-STEP SYNTHESIS OF CAPROLACTAM
John O. Turner, West Chester, Pa., assignor to Sun Research and Development Co., Philadelphia, Pa.
No Drawing. Filed Nov. 3, 1972, Ser. No. 303,563
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 A **6 Claims**

Caprolactam and cyclohexanone may be prepared in one step by reacting cyclohexanol with NH_3 and O_2 in the presence of lithium chloride at elevated temperatures.

3,836,524
PREPARATION OF ESTERS OF THIOCARBAMIC ACIDS
Harold M. Pitt, Lafayette, Calif., assignor to Stauffer Chemical Company, Westport, Conn.
No Drawing. Filed Apr. 26, 1973, Ser. No. 354,591
Int. Cl. C07c *155/02*
U.S. Cl. 260—239 BF **16 Claims**

This invention relates to a new process for preparing esters of thiocarbamic acids comprising (a) reacting a carbamyl chloride with a mercaptan in the presence of aqueous solution of a caustic agent, preferably excess caustic agent; (b) separating the organic and aqueous phases and (c) recovering the thiocarbamic acid ester from the organic phase.

3,836,525
PROCESS FOR THE PREPARATION OF LACTAMS AND SULFONIC ACID DERIVATIVES
Mitsuo Masaki, Chiba, and Masaru Uchida, Taizi Oda, and Koichi Yamamoto, Ichihara, Japan, assignors to Ube Industries, Ltd., Yamaguchi-ken, Japan
No Drawing. Filed Sept. 15, 1970, Ser. No. 72,551
The portion of the term of the patent subsequent to Oct. 24, 1989, has been disclaimed
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 A **3 Claims**

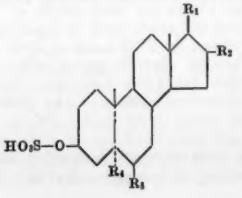
A process for the preparation of lactams and sulfonic acid derivatives of active hydrogen-containing organic compounds of the group consisting of oximes, alcohols, phenols, thiols, primary amines and secondary amines, which comprises reacting a lactam-O-sulfonic acid with a compound selected from the specified organic compounds under substantially anhydrous conditions.

3,836,526
NOVEL 1,2-METHYLENE - 9β,10α-STEROID COMPOUNDS, PHARMACEUTICAL PREPARATIONS WHICH CONTAIN THE NOVEL SUBSTANCES AS ACTIVE INGREDIENTS, AND METHODS OF PRODUCING THE SAID COMPOUNDS AND PREPARATIONS
Harmen van Kamp, Pieter Westerhof, and Lucas Morsink, Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
No Drawing. Filed Feb. 26, 1971, Ser. No. 119,401
Claims priority, application Netherlands, Mar. 4, 1970, 7003063
Int. Cl. C07c *169/32, 173/00*
U.S. Cl. 260—239.55 R **5 Claims**

The invention relates to a novel 1,2-methylene-17α-alkoxy-9β,10α-steroids, of the pregnane series which have a greatly-prolonged-action progestational activity. After the compounds have been worked up into pharmaceutical preparations they may be used as contraceptives and to counteract or prevent dysmenorrhea, endometriosis and habitual or imminent abortion. A highly active substance is, for example, 1,2-methylene-17α-methoxy-9β,10α-pregna-4,6-diene-3,20-dione.

3,836,527
WATER-SOLUBLE STEROL SULFATES
Klaus Irmscher, Darmstadt, Karl-Otto Freisberg, Speyer, and Dieter Orth, Herbert Nowak, and Zdenek Simane, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany
No Drawing. Filed Jan. 22, 1973, Ser. No. 325,400
Claims priority, application Germany, Jan. 22, 1972, P 22 03 048.4
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 A **10 Claims**

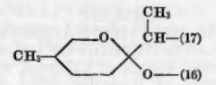
Water-soluble sterol sulfates of the formula



wherein R_1 is

$$—CH(CH_3)—(CH_2)_2—CH(R_3)—CH—(CH_3)_2,$$

R_2 is H and R_3 is H or C_2H_5; or R_1 and R_2 together form the group A



A

and wherein R_4 and R_5 are each O—SO_3H when R_1 and R_2 are other than A, and R_4 and R_5 are each O—SO_3H or together form the second valence bond of a double bond when R_1 and R_2 are A, and the physiologically acceptable salts thereof, possess valuble pharmacological properties which are useful in the treatment of hyperlipoproteinemias, especially in the treatment of hypercholesterolemias, hyperglyceridemias and hyperphospholipidemias.

3,836,528

α-(5-NITRO-2-FURYL) NITRONES

Shinsaku Minami, Yamato-Kouriyama, Jun-Ichi Matsumoto, Osaka, Masanao Shimizu, Kobe, and Yoshiyuki Takase, Amagasaki, Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

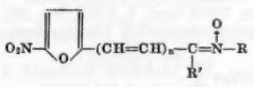
No Drawing. Continuation-in-part of application Ser. No. 746,749, July 23, 1968, now Patent No. 3,701,773, which is a continuation-in-part of abandoned application Ser. No. 592,265, Nov. 7, 1966. This application Mar. 7, 1972, Ser. No. 232,634

The portion of the term of the patent subsequent to May 30, 1989, has been disclaimed

Int. Cl. C07d *5/30*

U.S. Cl. 260—240 A **11 Claims**

Nitrone derivatives having anti-microbial activity comprising compounds of the formula



wherein n is 0 or 1, R^1 is an alkyl of 1 to 4 carbon atoms, R is a member selected from the group consisting of A—$(OH)_m$ and A—X, wherein A is an alkyl having 1 to 6 carbon atoms, X is a member selected from the group consisting of hydrogen and furyl, and m is an integer of 1 to 3 when n is 1 and an integer of 2 or 3 when n is 0.

3,836,529

DERIVATIVES OF 2-METHYLTHIO- AND 2-PHENYL - 4,6-DICHLORO-5-PYRIMIDINECARBOXALDEHYDE

Arthur A. Santilli, Havertown, Dong H. Kim, Wayne, and Richard A. Fieber, Drexel Hill, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Oct. 30, 1972, Ser. No. 302,302

Int. Cl. C07d *51/36*

U.S. Cl. 260—240 G **14 Claims**

2-Methylthio- and 2-phenyl-5-[N-(substituted)formimidoyl]-4,6-dichloropyrimidines have CNS-depressant activity.

3,836,530

NOVEL TETRAHYDROPYRANYL LACTOL DERIVATIVES

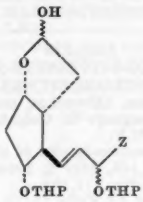
Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Application Sept. 16, 1971, Ser. No. 181,246, now Patent No. 3,711,515, which is a continuation-in-part of abandoned application Ser. No. 93,483, Nov. 27, 1970. Divided and this application Dec. 15, 1972, Ser. No. 315,368

Int. Cl. C07d *5/32*

U.S. Cl. 260—240 R **3 Claims**

Novel tetrahydropyranyl lactols of the formula



wherein Z is cis 1-pentyl-2-enyl or 1-pent-2-ynyl are provided as intermediates in preparing prostaglandins having pharmacological utility.

3,836,531

SYNTHETIC NACREOUS PIGMENTS AND METHOD FOR PRODUCTION THEREOF

Nobumitsu Yano, Iruma-gun, Oi-machi, Masao Fukushima and Itaru Fukinbara, Tokyo, Masanori Kishi, Omiya-shi, and Kazuyoshi Kimura, Yamoto-machi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Dec. 11, 1969, Ser. No. 884,338

Int. Cl. C07d *55/24, 55/36*

U.S. Cl. 260—248 A **11 Claims**

A synthetic nacreous pigment particle consisting of thin plate-shaped crystals of at least one compound selected from the group consisting of triazine derivatives thereof; and a decorative synthetic nacreous pigment containing the said pigment particles. In the production of the aforesaid pigment particle, crystals having smooth surfaces, uniform shapes and crystal sizes can be obtained by effecting the crystallization thereof in the presence of at least one surface active agent. Particularly, said synthetic nacreous pigment particles consisting of crystals having a length of 3–100 microns, a width of 1–40 microns and a thickness of 0.05–3 microns can impart elegant and refined luster to cosmetics, synthetic resin tablewares natural and synthetic fibers, natural and synthetic leathers, paper and glass, when applied thereto.

3,836,532

3-[(SUBSTITUTED)AMINO]-5,6-DIPHENYL-4-PYRIDAZINECARBOXYLIC ACIDS

Arthur A. Santilli, Havertown, Anthony C. Scotese, King of Prussia, and Dong H. Kim, Wayne, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Oct. 30, 1972, Ser. No. 302,303

Int. Cl. C07d *51/04*

U.S. Cl. 260—250 A **2 Claims**

3 - [(Substituted)amino] - 5,6 - diphenyl-4-pyridazinecarboxylic acids and the esters thereof have CNS-depressant or *in vitro* antiamebic activity.

3,836,533

10-HYDROXY - 2 - PHENYL - 5H-PYRIDO[1,2-a] PYRIMIDO[4,5-d]-PYRIMIDIN - 5 - ONE AND PROCESSES THERETO

Dong H. Kim, Wayne, and Arthur A. Santilli, Havertown, Pa., assignors to American Home Products Corp., New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,381
Int. Cl. C07d *57/20*
U.S. Cl. 260—256.4 F **5 Claims**

10 - Hydroxy - 2 - phenyl - 5H-pyrido[1,2-*a*]pyrimido[4,5-*d*] pyrimidin-5-one and the alkanoyl ester thereof are prepared by thermal cyclization of a 4-(2-amino-3-pyridyloxy) - 2 - phenyl - 5 - pyrimidinecarboxylic acid, alkyl ester or of 4-[(3-hydroxy-2 - pyridyl)amino] - 2 - phenyl-5-pyrimidinecarboxylic acid, or the ester thereof.

3,836,534

5-PIPERAZINO-6-HYDROXY-5H-BENZOCYCLOHEPTENES

Alexander E. Drukker, Milwaukee, and Claude I. Judd, Mequon, Wis., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 821,148, May 1, 1969. This application Aug. 16, 1971, Ser. No. 172,193
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 BC **2 Claims**

The compounds are 5-amino-6-hydroxy-6,7,8,9-tetrahydro-5H-benzocycloheptenes which are useful as chemical intermediates and as central nervous system stimulants. A compound disclosed is 5-isopropylamino-6-hydroxy-6,7,8,9-tetrahydro-5H-benzocycloheptene.

3,836,535

N-METHYL-N'-(2-AMINO ETHYL SULFONYL)-PIPERAZINE

Shun-Ichi Naito, 35 Murasakino Kamitoridacho, Kita-ku, Kyoto, Japan

No Drawing. Original application July 19, 1971, Ser. No. 164,007, now Patent No. 3,743,647, dated July 3, 1973. Divided and this application Dec. 1, 1972, Ser. No. 311,252
Claims priority, application Japan, Aug. 27, 1970, 45/75,350, 45/75,351, 45/75,352; Dec. 18, 1970, 45/114,446, 45/114,447
Int. Cl. C07d *51/72*
U.S. Cl. 260—268 S **2 Claims**

Aminoethanesulfonyl derivatives having a general formula R—$SO_2CH_2CH_2Y$ where R is selected from a group consisting of thiazolyl-2-amino, 1-pyrrolyl, 4-methylpiperazyl, and 1-indolyl and Y is NH_2 or, when R is thiazolyl-2-amino, said Y may be nicotinoylamino as well as manufacture methods thereof were disclosed.

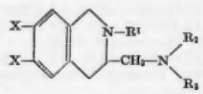
3,836,536

1,2,3,4-TETRAHYDRO-3-AMINOMETHYLISOQUINOLINES

Glenn C. Morrison, Dover, and Wieczeslaw A. Cetenko, Parsippany, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed June 8, 1972, Ser. No. 260,884
Int. Cl. C07d *35/10*
U.S. Cl. 260—286 R **9 Claims**

1,2,3,4-Tetrahydro-3-aminomethylisoquinolines of the formula:



wherein R_1 represents hydrogen, a lower alkyl or an aralkyl radical; R_2 represents hydrogen, a lower alkyl, an aryl, an aralkyl, a substituted aralkyl, a heterocyclic alkyl or a guanyl radical; R_3 represents hydrogen or a lower alkyl radical; and X represents hydrogen or a lower alkoxy radical, and the process for preparing these compounds starting with the corresponding tetrahydroisoquinolinecarboxylate are described. The compounds have useful anti-arrhythmic properties.

3,836,537

ZWITTERIONIC POLYMER HAIRSETTING COMPOSITIONS AND METHOD OF USING SAME

Fred P. Boerwinkle, Village of Lakeland, and Donald L. Waxberg, Village of Roseville, Minn. (both % 3M Center, St. Paul, Minn. 55101)

No Drawing. Continuation-in-part of abandoned application Ser. No. 78,968, Oct. 7, 1970. This application Oct. 25, 1972, Ser. No. 300,832
Int. Cl. C08f *29/46, 37/00, 37/18*
U.S. Cl. 260—29.6 HN **22 Claims**

Hairsetting is achieved with a solution containing a zwitterionic polymer having carboxylate and ammonium functionality.

3,836,538

4-SUBSTITUTED-BENZOCYCLOHEPTA-[1,2-d]-OXAZOLES AND THIAZOLES

Eugene E. Galantay, Morristown, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Application Jan. 18, 1971, Ser. No. 107,521, now Patent No. 3,692,788, which is a continuation-in-part of abandoned application Ser. No. 795,048, Jan. 29, 1969. Divided and this application July 13, 1972, Ser. No. 271,493
Claims priority, application Switzerland, Jan. 16, 1970, 630/70
Int. Cl. C07d *85/48, 91/42*
U.S. Cl. 260—302 F **12 Claims**

The compounds are 2-alkyl-4-(4'-substituted-1'-piperazinyl - 9,10-dihydro-4H-benzo[5,6]cyclohepta[1,2-d]oxazoles and thiazoles; the substituents being methyl, ethyl or 2-hydroxyethyl, e.g. 2-methyl-4-(4'-methyl-1'-piperazinyl)-9,10-dihydro-4H-benzo[5,6]cyclohepta[1,2-d]oxazole. The compounds are useful therapeutically.

3,836,539

OXADIAZOLONE DERIVATIVES

Roger Boesch, Vitry-sur-Seine, France, assignor to Rhone-Poulence S.A., Paris, France

No Drawing. Filed Sept. 6, 1972, Ser. No. 286,778
Claims priority, application France, Sept. 9, 1971, 7132587
Int. Cl. C07d *85/54*
U.S. Cl. 260—307 A **9 Claims**

1,3,4-Oxadiazol-2-one derivatives carrying in the 5-position an alkyl or cycloalkyl substituent and in the 4-position a phenyl substituent, which optionally carries in the 2- and 4- positions halogen or alkyl substituents and carries in the 5-position a substituent —$OCHR_3R_4$ (wherein R_3 is hydrogen, alkyl or alkoxy, and R_4 is carboxy, alkoxycarbonyl, hydroxymethyl, alkoxymethyl or a carbamoyl group of formula —$CONR_5R_6$ in which R_5 is hydrogen, alkyl, alkenyl or alkoxy and R_6 is hydrogen, alkyl or alkenyl) are new compounds useful as herbicides.

3,836,540

1-(DIMESITYLMETHYL)IMIDAZOLE

Cornelis van der Stelt, Haarlem, Netherlands, assignor to N.V. Koninklijke Pharmaceutische Fabrieken v/h Brocades-Stheeman & Pharmacia, Meppel, Netherlands

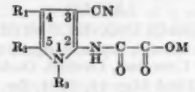
No Drawing. Continuation-in-part of abandoned application Ser. No. 151,551, June 9, 1971. This application Feb. 9, 1973, Ser. No. 330,909
Claims priority, application Great Britain, June 22, 1970, 30,247/70; Dec. 4, 1970, 57,788/70
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **2 Claims**

This invention relates to 1-(dimesitylmethyl)imidazole and its acid addition and quaternary ammonium salts and to a process for its preparation. In addition, to pharma-

ceutical compositions containing said compounds and methods for using said compositions as anti-fungal agents and in the treatment of infections caused by *Mycoplasma gallisepticum*.

3,836,541
3-CYANO-2-PYRRYL OXAMIC ACIDS
Herbert G. Johnson, John B. Wright, Charles M. Hall, and Donald T. Warner, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Filed Sept. 27, 1972, Ser. No. 292,651
Int. Cl. C07d *27/26*
U.S. Cl. 260—326.2 **5 Claims**

This invention relates to novel compounds and pharmaceutical compositions containing said compounds of the formula:



Ia

wherein M is selected from the group consisting of hydrogen, aluminum, ammonium, sodium, potassium, calcium, and tris-(hydroxymethyl)methylammonium, R_1 is selected from the group consisting of lower alkyl of 1 through 6 carbon atoms,

wherein X is selected from the group consisting of hydrogen, fluorine, chlorine, bromine, methoxy, methyl and trifluoromethyl, R_2 is selected from the group consisting of hydrogen and lower alkyl of 1 through 6 carbon atoms, and R_3 has the same meaning as R_1 and in addition hydrogen.

The compounds (1a) above are formulated with pharmaceutical carriers for inhalation or for oral, parenteral or rectal administration, with insufflation being the preferred method. The compositions are useful in the prophylactic treatment of sensitized humans and mammals for allergic and all anaphylactic reactions of a reagin-mediated and non-reagin-mediated nature.

3,836,542
DERIVATIVES OF HYDROXYBENZO[b] THIOPHENE
Lester L. Maravetz, Westfield, N.J., assignor to Mobil Oil Corporation
No Drawing. Filed June 7, 1971, Ser. No. 150,850
Int. Cl. C07d *63/22*
U.S. Cl. 260—330.5 **17 Claims**

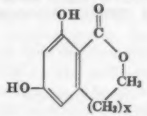
Certain amide, acid and ester derivatives of hydroxybenzo[*b*]thiophene form a new class of herbicides. These derivatives and herbicidal compositions containing them are highly effective as both pre-emergence and post-emergence herbicides. They are highly effective against Crabgrass and Barnyard grass, annual grass weeds which reproduce by seed, and Johnson grass, a perennial grass weed which reproduces by seed and underground rhizomes. Selected compounds of this invention also show selective activity in favor of certain important crops in pre-emergent applications.

3,836,543
METHOD OF PREPARING DIBENZO[d,g][1,3] DIOXOCIN ACIDS AND SALTS THEREOF
Johann Martin Grisar, Cincinnati, Ohio, assignor to Richardson Merrell Inc., New York, N.Y.
No Drawing. Filed Oct. 14, 1970, Ser. No. 80,767
Int. Cl. C07d *21/00*
U.S. Cl. 260—340.3 **4 Claims**

An improved method for the production of dibenzo-[*d,g*][1,3]dioxocin-6-carboxylic acids comprises reacting an alkali salt of a 2,2'-methylenebisphenol with at least two equivalents of dichloroacetate salt in the presence of a solvent. Preferably one equivalent of alkali dichloroacetate reactant is employed at the start of the reaction and one or more additional equivalents of said reactant is added from 24 to 48 hours from the start of the reaction.

3,836,544
SYNTHESIS OF ZEARALANES II AND RELATED COMPOUNDS AND INTERMEDIATES USEFUL IN THE SYNTHESES THEREOF
Wilbert Herbert Urry, Chicago, Ill., and Guy Towns Mullenbach, Berkeley, Calif., assignors to Commercial Solvents Corporation
No Drawing. Filed Apr. 25, 1972, Ser. No. 247,282
Int. Cl. C07d *7/120, 9/00*
U.S. Cl. 260—343.2 R **17 Claims**

This invention provides a new synthesis for norzearalane II and related compounds which related compounds and norzearalane II are represented by the formula



where X is an integer having a value from 1 to 13 inclusive.

The anabolic agent norzearalane II, in which $X=9$ in the foregoing formula, is prepared by a total chemical synthesis involving the reaction of 10-undecenal with malonic acid to produce *trans*-2,12-tridecadienoic acid; treating the acid so formed with diazomethane to yield methyl *trans*-2,12-tridecadienoate; reacting the methyl ester with ethyl acetoacetate and sodium ethoxide to form the sodium salt of ethyl 6-(9-decenyl)-β-dihydroresorcylate; brominating the dihydroresorcylate to prepare ethyl 3-bromo - 6 - (9-decenyl)-β-dihydroresorcylate; de-hydrobrominating the foregoing bromo derivative to give ethyl 6-(9-decenyl)-β-resorcylate; reacting the resorcylate ester with benzyl chloride to produce ethyl 6-(9-decenyl)-β-resorcylate dibenzyl ether; subjecting the benzylated ester to the action of diborane, water and hydrogen peroxide to form ethyl 2,4-bis(benzyloxy)-6-(10-hydroxydecyl)-benzoate; treating the foregoing benzoate with sodium ethoxide to prepare norzearalane II dibenzyl ether, and also to prepare as a by-product the dimeric dilactone of 2,4-bis(benzyloxy)-6-(10-hydroxydecyl)-benzoic acid; hydrogenating norzearalane II dibenzyl ether to form norzearalane II.

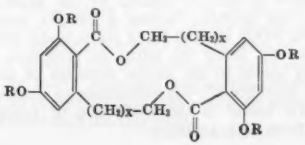
In general, a homologue of norzearalane II and/or of the corresponding dimeric dilactone is prepared by substituting for 10-undecenal in the foregoing sequence of reactions an unsaturated aldehyde having the formula:

$$CH_2{=}CH{-}(CH_2)_{X-1}{-}CHO$$

where X is an integer which may have the value 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 or 13.

Specifically zearalane II (where $X=10$) is prepared starting with 11-dodecenal and the dimeric dilactone from 6-(5-hydroxypentyl-β-resorcylic acid dibenzyl ether is prepared when the starting aldehyde is 5-hexenal (where $X=4$).

The invention also covers physiologically active compounds related to the zearalanes II and known as dimeric dilactones having the formula,



X is an integer which may have the value 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 or 13, and where R is either hydrogen or a benzyl radical ($C_6H_5CH_2$—).

More particularly, this invention relates to novel intermediates produced in the synthesis of the above compounds and to processes for making these intermediates.

3,836,545

ASPARTIC ANHYDRIDE HAVING A MASKED AMINO GROUP

Naohiko Yasuda and Yasuo Ariyoshi, Kanagawa, and Naotake Sato, Tokyo, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

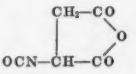
Filed Dec. 13, 1971, Ser. No. 207,104

Claims priority, application Japan, Dec. 14, 1970, 45/111,492

Int. Cl. C07d *5/04*

U.S. Cl. 260—346.8 R **10 Claims**

Aspartic anhydride having a masked amino group is readily obtained by reacting 3-isocyanato-2,5-dioxotetra-



with an alcohol in an inert solvent. The furan derivative is obtained from aspartic acid, its salts and addition compounds with mineral acids, and the corresponding addition compounds of aspartic anhydride by reaction with phosgene in an inert solvent at elevated temperature.

3,836,546

PROCESS FOR THE PRODUCTION OF 1-NITROANTHRAQUINONES

Walter Frey, Muttenz, Basel-Land, and Istvan Toth, Basel, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed Jan. 14, 1971, Ser. No. 106,594

Claims priority, application Switzerland, Jan. 30, 1970, 1,310/70; Aug. 26, 1970, 12,741/70

Int. Cl. C07c *79/10;* **C09b** *1/00*

U.S. Cl. 260—369 **10 Claims**

Process for the production of 1-nitroanthraquinones, especially of 1-nitroanthraquinone, in good yield and high purity by nitration of anthraquinones, particularly anthraquinone, with nitric acid and in the presence of (preferably highly concentrated) phosphoric acid and optionally of sulfuric acid or sulfates. Good results are obtained with an excess of fuming nitric acid and of concentrated phosphoric acid.

3,836,547

NITRATION OF ANTHRAQUINONE

Istvan Toth, Bottmingen, Basel-Land, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed June 7, 1972, Ser. No. 260,427

Claims priority, application Switzerland, June 10, 1971, 8,413/71; Oct. 5, 1971, 14,587/71; Oct. 20, 1971, 15,352/71

Int. Cl. C09b *1/00*

U.S. Cl. 260—369 **10 Claims**

Disclosed is a nitration process carried out in concentrated nitric acid and in which the rate of reaction of the nitration process is reduced by the addition of an inhibitor, the inhibitor having a basicity greater than that of the $NO_3^{\ominus}$ ion and being stable under the reaction conditions, e.g. being the nitrite or phosphate ion. The process is useful in the partial nitration of compounds having a plurality of sites susceptible to nitration, being particularly useful in the production of 1-nitro-anthraquinone from anthraquinone.

3,836,548

PROCESS FOR THE MANUFACTURE OF ANTHRAQUINONE DERIVATIVES

Maurice Grelat, Bettingen, and Jean Archambault, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed June 17, 1971, Ser. No. 154,169

Claims priority, application Switzerland, June 24, 1970, 9,546/70

Int. Cl. C09b *1/16, 1/20*

U.S. Cl. 260—376 **2 Claims**

1-amino-2-hydroxymethyl-anthraquinone is oxidised to give 1-amino-anthraquinone-2-carboxylic acid.

3,836,549

ANTHRAQUINONE COMPOUNDS

Eiji Yamada, Ibaragi, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan

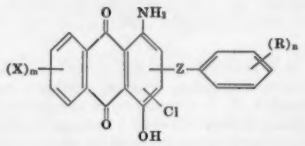
No Drawing. Filed May 11, 1971, Ser. No. 142,339

Claims priority, application Japan, May 16, 1970, 45/41,788; June 27, 1970, 45/56,306

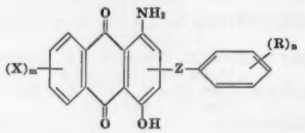
Int. Cl. C09b *1/50*

U.S. Cl. 260—380 **14 Claims**

Anthraquinone compounds of the formula,



wherein Z is oxygen or sulfur, X is hydrogen or a halogen, R is hydrogen atom or a group which does not impart solubility in water, and *m* and *n* each signify an integer of 1 to 4, which are useful for dyeing synthetic articles brilliant red with good fastness, and are useful as intermediates for the production of anthraquinone disperse dyes, and which may be prepared by reacting an anthraquinone derivative represented by the formula,



wherein R, X, Z, *m* and *n* are as defined above, with a chlorinating agent in the presence of a non-protonic polar solvent of an amide type.

3,836,550

CHENODEOXYCHOLIC ACID

William Arthur Jones, "Draycott," 127 Kingston Road, Staines, Middlesex, England, and Maurice Victor Burge, 11 Lascelles Close, Pilgrims Hatch, Brentwood, Essex, England

No Drawing. Continuation-in-part of application Ser. No. 223,713, Feb. 4, 1972. This application May 25, 1973, Ser. No. 363,992

Int. Cl. C07c *169/52*

U.S. Cl. 260—397.1 **16 Claims**

The invention relates to a proces for the preparation of chenodeoxycholic acid of high purity by a process in which crude chenodeoxycholic acid is precipitated in the form of its calcium or strontium salt which is then acidified to liberate the purified acid which is then recovered.

3,836,551

METHOD FOR MAKING SALTS OF N-ACYLAMINO CARBOXYLIC ACIDS

Guenter Schroeder, Ober-Ramstadt, Wolfgang Gaenzler, Darmstadt, Peter Uddrich, Darmstadt-Eberstadt, and Josef Babuliak, Pfungstadt, Germany, assignors to Rohm Gesellschaft mit beschrankter Haftung

No Drawing. Filed Jan. 13, 1971, Ser. No. 106,255

Claims priority, application Germany, Jan. 30, 1970, P 20 04 099.7

Int. Cl. C09f *7/00*

U.S. Cl. 260—404 8 Claims

Salts of N-acylamino carboxylic acids, useful as intermediates or as surface-active agents, are made by reacting an amino acid and a carboxylic acid, ester, or amide at 100° C.–250° C. in the presence of a salt-forming basic compound such as an alkali metal or alkaline earth metal hydroxide, a tertiary amine, or a quaternary ammonium hydroxide.

3,836,552

DERIVATIVES OF PERFLUORATED CARBOXYLIC ACIDS

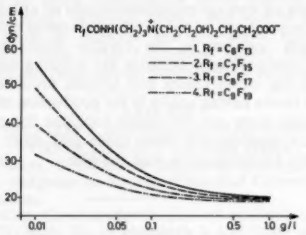
Hans Stach, Suzano Sao Paulo, Brazil, and Dieter Hoffmann, Burghausen, Salzach, and Heinz Brecht, Burg, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 31, 1972, Ser. No. 258,365

Claims priority, application Germany, June 2, 1971, P 21 27 232.2

Int. Cl. C07c *103/30*

U.S. Cl. 260—404.5 4 Claims



Surface-active perfluorated alkane-carboxylic acid-amide-amine derivatives and their quaternization products of the formulae

$$R_f—CONH—(CH_2)_3—N[(CH_2CH_2O)_nH]_2,$$

$$R_f—CONH—(CH_2)_3—\overset{\oplus}{N}[(CH_2CH_2O)_nH]_2[(CH_2)_zCOO^{\ominus}],$$

$$R_f—CONH—(CH_2)_3—\overset{\oplus}{N}[(CH_2CH_2O)_nH]_2(R)X^{\ominus},$$

in which n is a number from 1 to 4, z is 1 or 2, R represents a lower alkyl group and X^- is a halogen, sulfate or methosulfate anion, and process for preparing these compounds, wherein perfluoro-alkane-carboxylic acid alkyl esters are reacted with 1-(N,N-diethanol)-3-amino-propane and, depending on the compound, subsequently oxethylated, esterified and/or quaternized. The new compounds strongly reduce the surface tension of aqueous solutions. They have an excellent wetting power and may also be used as emulsifiers for fluoro-hydrocarbon/water emulsions.

3,836,553

CATALYTIC DEHYDROGENATION OF ALCOHOLS

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Dec. 10, 1970, Ser. No. 97,046

Int. Cl. C07c *45/16*

U.S. Cl. 260—409 18 Claims

The catalytic dehydrogenation of alcohols to aldehydes or ketones is described. The catalyst for this reaction is a complex of ruthenium with a biphyllic ligand. Optional cocatalysts such as rhenium compounds can be employed and, preferably, the dehydrogenation is performed under basic conditions. The dehydrogenation of the alcohol liberates hydrogen and, if desired, an unsaturated coreactant can be employed which will be hydrogenated under the reaction conditions. Thus the dehydrogenation of an alcohol to produce a desired ketone can be combined with the saturation of an olefin, a fatty unsaturated oil or acid, etc. In a typical embodiment, cyclohexanol is dehydrogenated to cyclohexanone by contacting with ruthenium trichloride and triphenylphosphine at a temperature of about 200° C. and sufficient pressure to maintain liquid phase conditions. The process can be beneficially employed in the oxidation of hydrocarbons to acids, e.g., in the oxidation of cyclohexane to adipic acid to convert the relatively refractory cyclohexanol to the more reactive cyclohexanone. Similarly, the oxidation can be used in the oxidation of Tetralin to tetralone by conversion of the relatively refractory and intermediate tetralol. The tetralone derivative is a useful intermediate in the production of various insecticides, dyes, etc.

3,836,554

PROCESS FOR THE LIGHTENING AND COLOR STABILIZATION OF FATTY-ACID FORERUNNINGS

Sasanka Sekhar Naskar and Gustav Renckhoff, Witten, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Filed July 28, 1971, Ser. No. 167,014

Claims priority, application Germany, Aug. 5, 1970, P 20 38 804.9

Int. Cl. C09f *5/10*

U.S. Cl. 260—419 7 Claims

A process for lightening and color-stabilization of fatty-acid forerunnings which comprises heating the fatty acids with technical-grade silicon at a temperature of from about 180° to 250° C. and distilling off the treated fatty-acid forerunnings under vacuum.

3,836,555

DIISOCYANATE-ORGANOMETALLIC CATALYST SOLUTIONS

Edmond G. Kolycheck, Lorain, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Apr. 20, 1973, Ser. No. 353,127

Int. Cl. C08g *22/24*

U.S. Cl. 252—431 N 6 Claims

A hindered phenolic phosphonate is used in a solution of triphenylbismuthine in an isocyanate or diisocyanate at an elevated temperature in order to prevent or reduce discoloration of the solution by catalyst degradation and to prevent or reduce subsequent discoloration of products obtained by reacting the isocyanate or diisocyanate solution with an active hydrogen containing compound or polymer. Use of another hindered phenol or phosphonate does not prevent such discoloration.

3,836,556

SYNERGISTIC METAL SEQUESTRANT

Ronald H. Carlson, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Original application July 13, 1970, Ser. No. 54,663, now Patent No. 3,734,861. Divided and this application Apr. 21, 1972, Ser. No. 246,489
The portion of the term of the patent subsequent to May 18, 1988, has been disclaimed
Int. Cl. C05d 9/02; A01n 7/00
U.S. Cl. 260—439 R 3 Claims

Mixtures of tris(hydroxymethyl)phosphine oxide, and tris(N-acetoaminomethyl)phosphine as well as the alkali metal salts thereof, exhibit marked synergism as sequestrant compositions over a broad pH range. The sequestrant compositions are useful as additives for detergents, metal cleaning baths, peroxide compositions and dyes. The chelate products are useful in the field of agriculture for the introduction of trace elements into plant life and especially in the treatment of iron chlorosis in plants.

3,836,557

SALTS OF ANTIMONY (V) ESTERS AS FLAME RETARDANTS

Richard Norris Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 3, 1971, Ser. No. 204,704
Int. Cl. C07f 9/90
U.S. Cl. 260—446 1 Claim

Water soluble salts of antimony (V) glycol esters are useful flame retardants for such materials as textiles or polymeric resins. These flame retardants are applied together with a source of organic halogen. A typical such salt is tri(ethylenedioxy)hydrogen antimony (V), sodium salt.

3,836,558

PROCESS FOR THE PRODUCTION OF TRIS-(TRIMETHYLSILOXY)-PHENYLSILANE

Armand de Montigny and Karl Schnurrbusch, Leverkusen, Klaus Seyfried, Schildgen, and Walter Noll, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 11, 1972, Ser. No. 270,741
Claims priority, application Germany, July 16, 1971, P 21 35 674.1
Int. Cl. C07f 7/08
U.S. Cl. 260—448.2 E 7 Claims

The method of producing tris-(trimethylsiloxy)-phenylsilane by hydrolytic reaction of trimethylchlorosilane, phenyltrichlorosilane and water is improved to give significant rise of yield by carrying out the reaction, according to the invention, in the presence of hexamethyldisiloxane in a proportion of 0.2 to 12 mols per mol of phenyltrichlorosilane, applying a molar ratio of trimethylchlorosilane to phenyltrichlorosilane of between 3.3:1 and 4:1, and adding the water gradually, in excess, until the hydrolysis is complete. This process is further improved by admixing the additionally employed hexamethyldisiloxane some time before the addition of any other ingredient with an acid equilibration catalyst, preferably followed by heating.

3,836,559

CATIONIC SILICONES

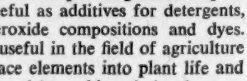
Bela Prokai, Mahopac, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Original application Dec. 22, 1969, Ser. No. 887,428, now Patent No. 3,658,867. Divided and this application Jan. 19, 1972, Ser. No. 219,118
Int. Cl. C07f 7/10
U.S. Cl. 260—448.2 N 2 Claims

Cationic bis(trimethylsiloxy)siloxanes of the formula:

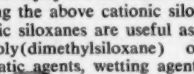
$$MD'_xM$$

wherein M is the trimethylsiloxy unit, $Me_3SiO_{1/2}$, x is an integer of 1 to 3, preferably 1, and D′ is a cationic difunctional siloxy unit of the formula:



wherein R° is a divalent organic group, t is 0 or 1, R is methyl or ethyl, C_6H_5 is a phenyl radical and X is an anion.

Also the tertiary amino bis(trimethylsiloxy) siloxanes of the formula MD_xM wherein M and x are as defined above and D is a tertiary amino difunctional siloxy unit of the formula:



wherein R, R°, t and C_6H_5 are as defined above, which are used in preparing the above cationic siloxanes.

The above cationic siloxanes are useful as emulsifiers, e.g., for water-poly(dimethylsiloxane) oil systems, bacteriocides, antistatic agents, wetting agents and mold release agents.

3,836,560

ORGANOSILICONE POLYMERS

Bela Prokai, Mahopac, and Bernard Kanner, West Nyack, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 122,164, Mar. 8, 1971. This application Dec. 27, 1971, Ser. No. 212,729
Int. Cl. C07f 7/18
U.S. Cl. 260—448.8 R 19 Claims

Linear siloxane-polyoxyalkylene $(AB)_n$ block copolymers having an average molecular weight of at least about 30,000, compositions of polyurethane-forming froths containing said copolymers, the curable froths produced from said compositions, methods for utilizing said froths as well as the cured foams and articles produced therefrom, said froths having utility in the production of molded polyurethane foam articles, foam backings for carpeting and fabrics, coatings for wire, cable and other articles, small cavity encapsulations, and the like.

3,836,561

METHOD OF TREATING ALUMINA CONTAINING OXIDES

Dean Arthur Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Continuation-in-part of application Ser. No. 191,057, Oct. 20, 1971, which is a continuation-in-part of application Ser. No. 15,219, Feb. 27, 1970, now Patent No. 3,691,099, which is a continuation-in-part of application Ser. No. 797,678, Feb. 7, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 697,587, Jan. 15, 1968, now Patent No. 3,460,934, which in turn is a continuation-in-part of application Ser. No. 457,485, May 20, 1965, now Patent No. 3,383,169. This application Aug. 16, 1972, Ser. No. 281,025
Int. Cl. B01j 11/32, 11/40
U.S. Cl. 252—450 6 Claims

Particle form alumina-containing amorphous oxides or combinations thereof with crystalline zeolites are acid treated to increase porosity and permeability, decrease bulk volume or improve one or more characteristics of the zeolite without substantial loss of structural strength at a pH below about 5 sufficient to react at least a portion of the alumina in the amorphous oxide in the presence of an ionizable water soluble salt.

3,836,562

N-[2-FORMYLPROPYLTHIO-(2)]-SULFONAMIDES

Ernst Roos, Cologne, Manfred Abele, Porz-Wahn, Roland Nast, Dormagen, and Theo Kempermann and Rudiger Schubart, Cologne, Germany, assignors to Bayer Aktiengellschaft

No Drawing. Original application Feb. 1, 1971, Ser. No. 111,612, now Patent No. 3,737,438. Divided and this application Sept. 15, 1972, Ser. No. 289,659
Claims priority, application Germany, Feb. 7, 1970, P 20 05 692.2
Int. Cl. C07c *143/76*
U.S. Cl. 260—453 R 2 Claims

This invention relates to new sulphenamides of 2-formyl propyl-2-sulphenic acid and to their use in the production and processing of mixtures based on a natural or synthetic rubber. The novel compounds are prepared by reacting 2-formyl propyl-2-sulphenic chloride with amines and amides in the presence of an acid binding agent. The retarders can be mixed into the rubber in the usual way.

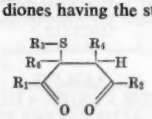
3,836,563

3-THIOACETYL OR BENZOYL-ALKANE-1,4-DIONES

William J. Evers, Atlantic Highlands, Howard H. Heinsohn, Jr., Hazlet, and Bernard J. Mayer, Cliffwood Beach, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

No Drawing. Filed Aug. 7, 1973, Ser. No. 386,454
Int. Cl. C07c *149/14, 149/32*
U.S. Cl. 260—455 R 3 Claims

Novel 3-thia-1,4 diones having the structure:



wherein R_1 and R_2 are the same or different and are either hydrogen or lower alkyl, R_3 is either hydrogen, lower alkyl, acyl, aroyl, benzyl or phenyl and each of R_4 and R_5 are the same or different and are either hydrogen or lower alkyl, such 3-thia-1,4 alkane diones being useful in altering the organoleptic properties of foodstuffs.

3,836,564

SULFONYLOXY BROMOACETANILIDES AND THEIR UTILITY AS BIOCIDES

Don R. Baker, Orinda, and Eugene G. Teach, El Cerrito, Calif., assignors to Stauffer Chemical Company, Westport, Conn.

No Drawing. Continuation-in-part of application Ser. No. 127,775, Mar. 24, 1971, which is a division of application Ser. No. 806,717, Mar. 12, 1969, both now abandoned. This application Sept. 11, 1972, Ser. No. 288,235
Int. Cl. C07c *143/02*
U.S. Cl. 260—456 A 3 Claims

Sulfonyloxy bromoacetanilides as new compositions and their activity as microbiocides. Representative compounds include m-isobutylsulfonyloxy bromoacetanilide and m-phenylsulfonyloxy bromoacetanilide.

3,836,565

STABILIZED ADHESIVE COMPOSITIONS

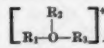
Bernd Brinkmann, Bad Zwischenahn, Germany, assignor to Schering AG, Berlin and Bergkamen, Germany

No Drawing. Filed May 31, 1973, Ser. No. 365,796
Claims priority, application Germany, June 10, 1972, P 22 28 379.0
Int. Cl. C07c *121/30, 121/48, 121/70*
U.S. Cl. 260—464 12 Claims

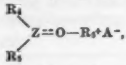
Stabilized adhesive compositions comprising an easily anionically polymerizable olefinic monomer of the formula

where X and Y are —CN or —COOR and a stabilizer which is:

(1) a trialkyl oxonium salt,

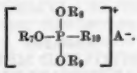


(2) a carboxonium or sulfonium salt



where Z is carbon or sulfur; or

(3) a phosphonium salt



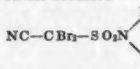
3,836,566

1,1-DIBROMO-1-CYANOMETHANESULFONAMIDES

Christian T. Goralski, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 25, 1973, Ser. No. 364,174
Int. Cl. C07c *121/00, 121/16*
U.S. Cl. 260—465.5 R 5 Claims

The compounds of the formula



wherein R_1 and R_2 independently represent hydrogen or a lower alkyl group. The compounds are prepared by reacting a 1-cyanomethanesulfonamide with bromine in aqueous alkaline medium. The compounds have antimicrobial activity.

3,836,567

PROCESS FOR THE CONTINUOUS PREPARATION OF UNSATURATED NITRILES

Hans Krekeler, Wiesbaden, Hans Fernholtz, Fischbach, Taunus, Dieter Freudenberger, Diedenbergen, Taunus, Hans-Joachim Schmidt, Frankfurt am Main, and Friedrich Wunder, Florsheim (Main), Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Jan. 17, 1972, Ser. No. 218,506
Claims priority, application Germany, Jan. 19, 1971, P 21 02 263.9
Int. Cl. C07c *121/02, 121/30*
U.S. Cl. 260—465.9 10 Claims

Process for the preparation of unsaturated nitriles from hydrocyanic acid and esters of unsaturated alcohols and carboxylic acids in the gaseous phase by passing the reaction mixture over carrier catalysts impregnated with a copper(II) salt, a cobalt salt or a mixture of both salts. Preferably, also a Lewis acid is added.

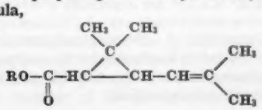
3,836,568

PROCESS FOR PRODUCTION OF LOWER ALKYL ESTERS OF CIS-CHRYSANTHEMUM MONOCARBOXYLIC ACID

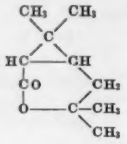
Akio Higo and Nobushige Itaya, Ikeda, Hajime Hirai, Tokyo, and Hirosuke Yoshioka, Toyonaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Filed Nov. 24, 1971, Ser. No. 201,988
Claims priority, application Japan, Dec. 28, 1970, 46/129,967; Mar. 11, 1971, 46/13,603
Int. Cl. C07c *67/02, 69/74*
U.S. Cl. 260—468 H 7 Claims

A process for preparing lower alkyl cis-chrysanthemates of the formula,



wherein R is a lower alkyl, which comprises reacting a dihydrochrysanthemolactone of the formula,



with a lower aliphatic alcohol in the presence of an acid catalyst, to remove the water produced out of the reaction system.

3,836,569

ALKYL 4-[o-(SUBSTITUTED METHYLENEAMINO) PHENYL]-3-THIOALLOPHANATES

Joel B. Wommack, Jr., 718 Peach Tree Rond, Apt. C, Claymont, Del. 19703

No Drawing. Filed Oct. 13, 1969, Ser. No. 865,947
Int. Cl. C07c *157/06*
U.S. Cl. 260—470 5 Claims

Various alkyl 4-[*o*-(substituted methyleneamino) phenyl]-3-thioallophanates are useful as fungicides and mite ovicides.

The compounds are prepared by reacting alkyl 4-(*o*-aminophenyl)-3-thioallophanates with aldehydes or trialkyl orthoformates. Some of the compounds are prepared by further reacting the reaction product of an alkyl 4-(*o*-aminophenyl)-3-thioallophanate and a trialkyl orthoformate with a primary or secondary amine.

Exemplary species are methyl 4-[*o*-(*o*-fluorobenzylideneamino)phenyl]-3-thioallophanate and methyl 4-[*o*-(4-methylbenzylideneamino)phenyl]-3-thioallophanate.

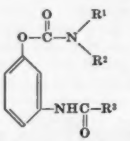
3,836,570

m-AMIDOPHENYLCARBAMATES

Karoly Szabo, Syracuse, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 719,698, Apr. 8, 1968, which is a continuation-in-part of applications Ser. No. 484,421, Sept. 1, 1965, Ser. No. 574,805, Aug. 24, 1966, and Ser. No. 676,638, Oct. 19, 1967, all now abandoned, which in turn is a division and continuation-in-part of application Ser. No. 517,886, Dec. 27, 1965, now Patent No. 3,399,265. This application Aug. 28, 1968, Ser. No. 755,772
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C 15 Claims

m-Amidophenylcarbamates having the general formula



in which R^1 is hydrogen and lower alkyl containing from one to five carbon atoms; R^2 is alkyl containing from one to eight carbon atoms, cyclohexyl, lower alkenyl containing from three to four carbon atoms, phenyl and substituted phenyl in which the substituents are lower alkyl, lower alkoxy, nitro and halogen; and R^3 is an alkyl group containing one to six carbon atoms, inclusive. The compounds are effective in the control of grasses and broadleaf plants with both pre-emergence and post-emergence activity. The compounds in which R^1 is hydrogen, R^2 is methyl and R^3 is alkyl are especially active as insecticides. Representative compounds are: 3-(N-isopropylcarbamoyloxy)-propionanilide, 3-(N-butylcarbamoyloxy)-propionanilide, m-(N-methylcarbamoyloxy) acetanilide, m-(N-methyl carbamoyloxy) propionanilide and m-(N-methylcarbamoyloxy)-n-butylanilide.

3,836,571

ETHYLENICALLY UNSATURATED DERIVATIVES OF 4-AMINOBENZOIC ACID

Martin Skoultchi, Somerset, and Eric A. Meier, North Brunswick, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Original application Aug. 17, 1970, Ser. No. 64,574, now Patent No. 3,666,732. Divided and this application Mar. 7, 1972, Ser. No. 232,530
Int. Cl. C07c *101/62*
U.S. Cl. 260—471 R 2 Claims

Ethylenically unsaturated derivatives of 4-aminobenzoic acid are prepared by a novel method involving the reaction under controlled conditions of 4-aminobenzoic acid and various derivatives thereof with allyl chloride. The resulting monomers may, thereafter, be copolymerized with a wide variety of conventional ethylenically unsaturated, i.e. vinyl, monomers. The monomeric derivatives as well as the copolymers prepared therefrom are ultraviolet absorbers in the 280–320 millimicrons range and find a particular utility as a sun-screen agent in suntan formulations.

3,836,572

DICARBAMOYL HYDROXAMATES

John E. Franz, Crestwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Apr. 2, 1973, Ser. No. 347,114
Int. Cl. C07c *125/06*
U.S. Cl. 260—472 13 Claims

The dicarbamoyl hydroxamates of this invention are pesticidally active and particularly useful as herbicides.

3,836,573

PROCESS FOR THE PURIFICATION OF BENZENECARBOXYLIC ACID ESTERS BY CRYSTALLIZATION

Georg Schreiber, Rodenkirchen, Heinz Schroeder and Wolfgang Hoppe, Witten, Eugen Hadamovsky, Witten-Annen, Hans-Walter Ovenhausen, Herbede, and Bernhard Piotrowski, Wanne-Eickel, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Nov. 12, 1971, Ser. No. 198,275
Claims priority, application Germany, Nov. 14, 1970, P 20 56 149.3
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 B 9 Claims

Benzenecarboxylic acids or benzenecarboxylic acid esters, in crude form, especially dimethylterephthalate in crude form is purified by crystallization in a continuous two stage process. In the first stage the crude form dissolved in, e.g. methanol, is passed as a thin film through a nucleation cooler wherein nucleation and initial crystal growth occur, the growth being to a particle size of, e.g. about 100 microns. In the second stage the effluent from the nucleation cooler is agitated and cooled for further crystal growth to provide crystals of sizes in the range of, e.g. 250–350 microns. The crystals can be separated by filtration or centrifuging. High unit time yields are obtained, at low investment cost and low storage capacity requirements.

3,836,574

PROCESS FOR THE MANUFACTURE OF FILM- AND FIBER-FORMING POLYESTERS

Eberhard Achsel, Kelkheim, Taunus, and Siegfried Sommer, Bad Soden, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation of application Ser. No. 177,440, Sept. 2, 1971. This application June 20, 1973, Ser. No. 371,662
Int. Cl. C08g *17/01*
U.S. Cl. 260—475 P 5 Claims

Film- and fiber-forming polyesters, optionally also polyesters suitable for the processing of plastic articles, are

prepared starting from diols and a dicarboxylic acid/dicarboxylic acid alkyl ester mixture, in which the proportion of the number of free carboxyl groups to that of the esterified carboxyl groups is at least 60:40. These starting substances are reacted to form the bis-diol-dicarboxylic acid esters and their lower oligomers, and these substances are then polycondensed in known manner to form high molecular weight polyesters. Preferably, polyethyleneterephthalate is prepared according to this process.

3,836,575

PROCESS FOR THE MANUFACTURE OF METHYL METHACRYLATE

Albert Bouniot, Melle, France, assignor to Rhone-Progil, Paris, France

No Drawing. Filed June 19, 1972, Ser. No. 263,846
Claims priority, application France, June 17, 1971, 7122946
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 D **19 Claims**

The continuous manufacture of methyl methacrylate by heating β-methoxy isobutyric acid in the presence of a catalyst of aryl sulfonic acid and with the continuous addition of water.

3,836,576

PROCESS FOR THE TRANSESTERIFICATION OF UNSATURATED ESTERS

Claude Falize, Le Havre, and Albert Bouniot, Melle, France, assignors to Rhone-Progil, Paris, France

Filed Apr. 23, 1973, Ser. No. 353,590
Claims priority, application France, May 17, 1972, 7218382
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R **22 Claims**

A process for the transesterification with an alcohol or alcohols containing 3–22 carbon atoms of a methacrylic acid ester formed of an alcohol having a lower boiling point than the above alcohol, and wherein the transesterification reaction is carried out in the presence of a titanium alcoholate as a catalyst and dinaphthyl phenylene diamine as a polymerization inhibitor, in which the reaction is carried out with or without bubbling air through the reaction mixture, and removing the displaced alcohol from the reaction mixture, as by distillation.

3,836,577

PERFLUOROALKYL COMPOUNDS, THEIR MANUFACTURE, THEIR POLYMERISATION PRODUCTS AND THEIR USE

Horst Jaeger, Wyhlenweg 10, Bettingen, Switzerland, and Paul Schaefer, Morystrasse 88, Riehen, Switzerland

No Drawing. Original application Aug. 17, 1971, Ser. No. 172,545, now Patent No. 3,780,093. Divided and this application May 16, 1973, Ser. No. 360,873
Claims priority, application Switzerland, Aug. 24, 1970, 12,591/70
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 H **2 Claims**

Perfluoroalkyl compounds are provided in which the perfluoroalkyl radical is bounded through a linear or cyclic aliphatic radical to the carboxylic group of an aliphatic unsaturated carboxylic acid. These products and their polymerization products are useful for finishing various substrates, especially for the production of aliphatic finishes on the paper, leather, non-wovens and textiles.

3,836,578

PROSTANOIC ACID DERIVATIVES

Bengt Samuelsson, Kemiska Institutionen, Karolinska Institutet, Stockholm 60, Sweden

No Drawing. Continuation-in-part of abandoned application Ser. No. 514,405, Dec. 16, 1965. This application Apr. 4, 1967, Ser. No. 628,285
Int. Cl. C07c *61/36, 69/74*
U.S. Cl. 260—514 D **23 Claims**

This invention is a class of new and useful prostanoic acid derivatives and processes for preparing them. These new compounds are similar in structure to certain of the known prostaglandins but differ in that each has a carbonyl group rather than a hydroxy group at the C–15 position of prostanoic acid. Some of these new compounds also differ in having a double bond between C_5 and C_6 but not between C_{13} and C_{14}. These new prostanoic acid derivatives have biological properties which cause them to be useful variously in the treatment of hypertension, hypotension, and conditions involving abnormal lipid mobilization.

3,836,579

CERTAIN SUBSTITUTED CARBAMOYL THIOFORMYL CHLORIDES

Wendell Gary Phillips, Olivette, and Kenneth Wayne Ratts, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 24, 1971, Ser. No. 174,536
Int. Cl. C07c *153/00;* **C07d** *27/04, 29/36*
U.S. Cl. 260—543 R **5 Claims**

Substituted carbamoyl thioformyl chlorides are prepared from dichloromethane sulfenyl chlorides by reaction with a tertiary phosphine. The thioformyl chlorides are pesticidally active and particularly useful as preemergent herbicides.

3,836,580

2,6-DICHLOROBENZYLIDENEHYDRAZIDES

William F. Bruce, Havertown, Pa., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Original application July 1, 1971, Ser. No. 159,056, now Patent No. 3,746,703. Divided and this application Jan. 26, 1973, Ser. No. 326,938
Int. Cl. C07c *109/10*
U.S. Cl. 260—558 H **5 Claims**

Novel derivatives of 2,6-dichlorobenzylidenehydrazides have been prepared which have useful pharmacological activity.

3,836,581

1-ALKOXIMINO-2-(ω-SUBSTITUTED-ALKYL)-2-CYCLOPENTENES

Karel Francis Bernady, Suffern, and John Frank Poletto, Nanuet, N.Y., and Martin Joseph Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 208,951, Dec. 16, 1971. This application Feb. 26, 1973, Ser. No. 335,842
Int. Cl. C07c *131/08*
U.S. Cl. 260—566 AE **4 Claims**

This disclosure described certain 1-alkoximino-2-(ω-substituted-alkyl)-2-cyclopentenes useful as intermediates for the preparation of homologues, analogues, congeners, and derivatives of 9-oxo-13-*trans*-prostenoic acid and of 9-hydroxy-13-*trans*-prostenoic acid which have antimicrobial activity and prostaglandin-like hypotensive activity.

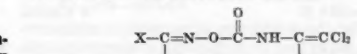
3,836,582

CARBAMALDOXIMES

Jacques Perronnet and Pierre Girault, Paris, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Filed Oct. 23, 1973, Ser. No. 408,744
Claims priority, application France, Nov. 6, 1972, 7239141
Int. Cl. C07c *131/00*
U.S. Cl. 260—566 AC **2 Claims**

Novel carbamaldoximes of the formula



wherein Y is selected from the group consisting of hydrogen, chlorine and bromine and X is selected from the group consisting of phenyl optionally substituted with at least one member of the group consisting of halogen,

cyano, —NO_2, alkyl of 1 to 6 carbon atoms and alkoxy of 1 to 6 carbon atoms and nitrofuryl having fungicidal activity.

3,836,583
MANUFACTURE OF KETENE

Guenther Matthias and Gerhard Schulz, Ludwigshafen, Werner Kasper, Frankenthal, and Klaus Feind, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Nov. 30, 1971, Ser. No. 203,452
Claims priority, application Germany, Dec. 2, 1970, P 20 59 292.1
Int. Cl. C07c *49/22*
U.S. Cl. 260—585.5 **10 Claims**

Manufacture of ketene by thermal dissociation of acetic acid at reduced pressure and in the presence of catalysts using a prescribed ratio of reactor volume to the internal surface area of the reactor and to the volume of acetic acid feed.

3,836,584
TRICYCLO[5,4,0,$0^{3,9}$]UNDECA-5,10-DIEN-2-ONES

Georg Frater, Greifensee, Hans Greuter, Horgen, and Hans Schmid, Schwerzenbach, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Oct. 25, 1972, Ser. No. 300,603
Claims priority, application Switzerland, Nov. 12, 1971, 16,517/71
Int. Cl. C07c *45/00, 49/54*
U.S. Cl. 260—586 M **9 Claims**

Tricyclo[5,4,0,$0^{3,9}$]undeca - 5,10 - dien-2-ones and tricyclo[5,3,1,$0^{3,8}$]undeca-5,9-dien-2-ones which are useful in the perfumary art and a process for their preparation from phenols and cyclohexenones.

3,836,585
DEHALOGENATION OF DIHALO-5H-DIBENZOCYCLOHEPTENONES USING CHROMOUS CHLORIDE

Edward W. Tristram, Watchung, and Jan ten Broeke, Somerset, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 818,838, Apr. 23, 1969. This application Jan. 22, 1973, Ser. No. 325,685
Int. Cl. C07c *49/76, 49/82*
U.S. Cl. 260—590 **1 Claim**

There is provided a novel method of preparing dibenzocycloheptenones having, optionally, substituents in either or both of the benzo-nuclei. The method comprises conversion of the appropriate stilbene carboxylic acid to the corresponding acid chloride, halogenation of the bridge double bond, ring closure and dehalogenation.

3,836,586
PROCESS FOR PRODUCING ACROLEIN OR METHACROLEIN

Keisho Yamada, Sumio Umemura, Kyoji Ohdan, and Kazuo Fukuda, Ube, Japan, assignors to Ube Industries, Ltd., Ube, Yamaguchi-ken, Japan

No Drawing. Filed Dec. 1, 1970, Ser. No. 94,215
Claims priority, application Japan, June 12, 1970, 45/50,209
Int. Cl. C07c *45/02*
U.S. Cl. 260—604 R **4 Claims**

A process for the production of acrolein or methacrolein in which propylene or isobutylene is contacted with oxygen or oxygen-containing gas in a vapor phase in the presence of a specified catalyst. The catalyst comprises (a) bismuth antimonate and (b) at least one molybdic acid salt of the following metals; manganese, iron, and cobalt.

3,836,587
ORGANO PHOSPHONIUM SALTS

Martin Grayson, Norwalk, and Patricia Tarpey Keough, Ridgefield, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Application Nov. 17, 1969, Ser. No. 871,628, now Patent No. 3,689,601, which is a continuation of abandoned application Ser. No. 674,107, Oct. 10, 1967, which in turn is a continuation of abandoned application Ser. No. 292,123, July 1, 1963. Divided and this application May 22, 1972, Ser. No. 255,770
Int. Cl. C07f *9/28*
U.S. Cl. 260—606.5 F **1 Claim**

Organo phosphonium salts of the formula:

(A) $[R^1R^2R^3PCH_2CH_2Q]^{\oplus}X^{\ominus}$

are prepared by reacting compounds of the formulae:

(I) $R^1R^2R^3PCH_2CH_2OY \cdot X$

or

(II) $R^1R^2R^3PCH{=}CH_2 \cdot X$

with H—Q wherein: X is halogen, Y is the residue of an acylating agent, and Q is the residue of a reactant having an electronegative group and providing a replaceable hydrogen atom (H) which is replaced by the

$R^1R^2R^3PCH_2CH—$

group of compounds I or II in forming the compound A.

3,836,588
METHOD OF PRODUCING CUMENE HYDROPEROXIDE

Cesare Reni, Busto Arsizio, Luigi Lugo, Milan, and Giorgio Gualdi, Verona, Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy

No Drawing. Filed Sept. 29, 1970, Ser. No. 76,588
Claims priority, application Italy, Oct. 1, 1969, 22,765/69
Int. Cl. C07c *73/08*
U.S. Cl. 260—610 B **1 Claim**

Cumene hydroperoxide is produced by the oxidation of cumene with molecular oxygen in the presence of the sodium salt of cumene hydroperoxide, this salt having been produced in solution and used directly as such.

3,836,589
METHOD FOR THE OXIDATION OF HYDROCARBONS

Howard P. Angstadt, Media, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

No Drawing. Filed Sept. 24, 1969, Ser. No. 860,816
Int. Cl. C07c *73/06*
U.S. Cl. 260—610 B **4 Claims**

Hydrocarbon oxidation processes utilizing water-sensitive catalysts, wherein said processes yield water as a by-product, may be improved by carrying out the oxidation in the presence of a desiccant which is inert to the reaction conditions of the process.

3,836,590
ALPHA,ALPHA,ALPHA',ALPHA'-TETRAKIS(4 - HYDROXY-3,5-DISUBSTITUTED PHENYL)XYLENE

Gordon D. Brindell, Crystal Lake, and Joseph P. Wuskell, Barrington, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

No Drawing. Filed May 12, 1972, Ser. No. 252,859
Int. Cl. C07c *39/16*
U.S. Cl. 260—619 A **10 Claims**

A new series of compounds defined broadly as α,α,α',α' - tetrakis(4 - hydroxy-3,5-disubstituted phenyl) xylenes, which are useful as antioxidants for organic materials normally subject to oxidative deterioration, is disclosed.

3,836,591

PROCESS FOR THE PREPARATION OF DIPHENOLS

Paolo Maggioni, Montevecchio, Italy, assignor to Brichima S.p.A., Milan, Italy

No Drawing. Filed Jan. 17, 1972, Ser. No. 218,557

Claims priority, application Italy, July 17, 1971, 26,963/71

Int. Cl. C07c *37/00*

U.S. Cl. 260—621 G 1 Claim

A process is disclosed for making catechol and hydroquinone using hydrogen peroxide to hydroxylate phenol in the presence of a C_{1-4} alkanoic acid using trifluoroacetic acid as a catalyst. The reaction temperature is from 50°–100° C. and the molar ratio of phenol:hydrogen peroxide is from 4:1 to 20:1.

3,836,592

ISOMERIZATION OF 1,2-DICHLORO-3-BUTENE TO 1,4-DICHLORO-2-BUTENE

Ronnie D. Gordon, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Apr. 6, 1971, Ser. No. 131,771

Int. Cl. C07c *21/04*

U.S. Cl. 260—654 R 6 Claims

1,2-dichloro - 3-butene (3,4-dichloro-1-butene) is isomerized to 1,4-dichloro-2-butene in the presence of an organic quaternary salt catalyst.

3,836,593

POLYALKENAMERS AND PROCESS FOR THE PREPARATION THEREOF

Roland Streck and Heinrich Weber, Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Filed Feb. 3, 1972, Ser. No. 223,294

Claims priority, application Germany, Feb. 4, 1971, P 21 05 161.6

Int. Cl. C08f *1/80*

U.S. Cl. 260—677 R 8 Claims

The molecular weight of polyalkenamers produced by a ring-opening polymerization of cyclic olefins employing a catalyst containing a metal of Subgroups 5 to 7 of the Periodic Table is regulated by conducting the polymerization in the presence of a non-conjugated olefin containing at least two non-conjugated double bonds, at least one of which is acyclic, and 0–2 alkyl or aryl groups.

3,836,594

HYDROCARBON CONVERSION PROCESS AND SILICA AND/OR ALUMINA-CONTAINING CATALYST THEREFOR

Roy John Sampson and Ivan James Samuel Lake, both of Norton Hall, The Green, Norton, Stockton-on-Tees, England

No Drawing. Continuation of application Ser. No. 142,411, May 11, 1971, which is a continuation-in-part of application Ser. No. 91,194, Nov. 19, 1970, both now abandoned. This application Apr. 23, 1973, Ser. No. 353,621

Claims priority, application Great Britain, Nov. 27, 1969, 58,157/69

Int. Cl. C07c *5/24*

U.S. Cl. 260—668 A 13 Claims

Hydrocarbon conversion processes catalysed by silica, alumina or silica/alumina catalysts, are improved by exposing the catalyst before use to liquid or supercritical water at above 100° C.

3,836,595

POLYMERIZATION OF ETHYLENE WITH SUPPORTED π-ALLYL CHROMIUM COMPLEXES

Robert N. Johnson, Basking Ridge, and Frederick J. Karol, Somerset, N.J., assignors to Union Carbide Corporation

No Drawing. Continuation-in-part of application Ser. No. 878,566, Nov. 20, 1969, which is a continuation-in-part of application Ser. No. 784,478, Dec. 17, 1968, both now abandoned. This application Oct. 27, 1971, Ser. No. 193,144

Int. Cl. C07c *3/10*; C08f *1/74*

U.S. Cl. 260—683.15 D 8 Claims

π-Allyl chromium compounds, when supported on an inorganic oxide having a high surface area and while in the chromium [II] valence state, yield ethylene polymerization catalysts having an unusually high level of polymer productivity.

3,836,596

POLYMERIZATION OF DIALKYL VINYLIDENE COMPOUNDS TO OILS

Gary L. Driscoll, Boothwyn, Pa., assignor to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 134,095, Apr. 14, 1971, which is a continuation-in-part of application Ser. No. 52,771, July 6, 1970, both now abandoned. This application May 1, 1972, Ser. No. 248,982

Int. Cl. C07c *3/18*

U.S. Cl. 260—683.15 B 10 Claims

Polymerization of olefins of the formula

wherein —R is selected from the class consisting of $—CH_3$ and $—C_2H_5$ and —R′ is an alkyl group of from 1 to 10 carbon atoms, to form oils having a relatively high viscosity index as compared to other comparable oils using stannic chloride as the catalyst and a solvent selected from the class consisting of nitromethane, nitroethane and mixtures thereof together and with nitropropane, at from —30 to 100° C. and preferably from —30° to 50° C. The stannic chloride is present in from 0.1 to 5 and preferably 0.3 to 3 volume percent as based on the solvent present.

3,836,597

HYDROCARBON ISOMERIZATION PROCESS

Swan T. Sie, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Mar. 5, 1973, Ser. No. 338,113

Claims priority, application Netherlands, Apr. 25, 1972, 7205563

Int. Cl. C07c *5/24*

U.S. Cl. 260—683.65 9 Claims

A decline of the activity of Pt/mordenite isomerization catalysts is prevented when during calcination and/or regeneration at temperatures between 350–530° C. the water vapor pressure in the gas surrounding the catalyst is such that the logarithm of this pressure (in mm. mercury) is between $T-450/50$ and 2.8 T being the temperature in degrees C.

3,836,598
OLEFINIC SILICONE-ORGANIC GRAFT COPOLYMERS
Marshall L. Wheeler, Jr., Olean, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
No Drawing. Application July 23, 1970, Ser. No. 57,797, now Patent No. 3,674,891, which is a continuation-in-part of application Ser. No. 422,037, Dec. 29, 1964, now Patent No. 3,573,334, which in turn is a continuation-in-part of abandoned application Ser. No. 356,944, Apr. 22, 1964. Divided and this application Apr. 17, 1972, Ser. No. 244,852
Int. Cl. C08f *29/50*; C08g *47/10*
U.S. Cl. 260—827 6 Claims

This invention provides non-crosslinked copolymers of olefinic siloxanes grafted to a polyacrylate polymer. The graft copolymers of this invention are useful as rubber lubricants, particularly for tire molds, lubricants for metal-to-metal moving surfaces, textile lubricants, and as additives to thermoplastic organic polymers to improve the levelling and other properties thereof.

3,836,599
LIQUID PRODUCTS PRODUCED BY REACTION OF PHOSPHONITRILIC ESTERS WITH PHOSPHORIC ANHYDRIDE
Borivoj Richard Franko-Filipasic, Morrisville, Pa., and John Francis Start, Mercerville, N.J., assignors to FMC Corporation, New York, N.Y.
No Drawing. Filed Mar. 1, 1972, Ser. No. 230,955
Int. Cl. C07f *9/24*; C09k *3/28*
U.S. Cl. 260—927 N 5 Claims

Novel liquid oligomeric flame-retardant compounds are prepared by heating together liquid polyphosphonitrilic esters with phosphoric anhydride.

3,836,600
STABILIZED LOW PROFILE RESINS
James L. Brewbaker, Robert M. Nowak, and Kent S. Dennis, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Feb. 5, 1973, Ser. No. 329,702
Int. Cl. C08f *43/08*
U.S. Cl. 260—836 34 Claims

Improved stability to low profile thermosettable resin compositions is obtained by the addition thereto of an ethylene oxide block copolymer having the formula

$$B_x—CH_2CH_2(OCH_2CH_2)_yOH$$

or

$$HO(CH_2CH_2O)_yCH_2CH_2—B_x—CH_2CH_2(OCH_2CH_2)_yOH$$

where B is a block segment of a polymerized alkenylaromatic or conjugated diene monomer.

3,836,601
NITRATION PROCESS
Walter Frey, Muttenz, Basel-Land, and William Yarborough, Binningen, Basel-Land, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland
Filed Apr. 25, 1972, Ser. No. 247,425
Claims priority, application Switzerland, Apr. 30, 1971, 6,387/71
Int. Cl. C07c *79/10, 79/36*
U.S. Cl. 260—369 19 Claims

Disclosed is a nitration process in which the starting material, e.g. anthraquinone, is nitrated using concentrated nitric acid and in which the rate of reaction is reduced by the addition of dilute nitric acid, the amounts of concentrated and dilute acids used being such that the concentration of nitric acid in the resulting residual acid solution is greater than at the azeotropic point of said solution, the solution subsequently being fractionated to yield a concentrated nitric acid fraction and a dilute nitric acid fraction, which fractions can conveniently be recycled, the former to nitrate further starting material, the latter to reduce the rate of nitration of the further starting material.

3,836,602
METHOD OF CYCLOTRIMERIZING 1-BUTEN-3-YNE TO FORM 1,2,4-TRIVINYLBENZENE
Lawson G. Wideman, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Nov. 16, 1973, Ser. No. 416,715
Int. Cl. C07c *3/04, 15/10*
U.S. Cl. 260—669 4 Claims

There is disclosed a method of preparing 1,2,4-trivinylbenzene by cyclotrimerizing 1-buten-3-yne. The catalyst employed in this cyclotrimerization comprises (1) iron salts or iron complexes, (2) an organometallic reducing agent and (3) certain ligands containing nitrogen.

3,836,603
PROCESS FOR PREPARING PARA-XYLENE
James E. Connor, Jr., Wynnewood, Robert W. Rieve, Springfield, and Harold Shalit, Drexel Hill, Pa., assignors to Atlantic Richfield Company
No Drawing. Filed Mar. 29, 1973, Ser. No. 346,227
Int. Cl. C07c *5/26*
U.S. Cl. 260—673.5 9 Claims

Method for the conversion of isobutane to para-zylene wherein the isobutane is thermally oxidized with molecular oxygen to produce an oxidate which is predominantly a mixture of tertiary butyl hydroperoxide and tertiary butyl alcohol. The oxidate is employed as the oxidizing agent together with a catalyst such as a molybdenum catalyst in the epoxidation of an olefin such as propylene to produce the olefin oxide and reduce the tertiary butyl hydroperoxide to tertiary butyl alcohol. The total tertiary butyl alcohol stream or any portion thereof is dehydrated preferably over alumina to isobutylene which is then thermally dimerized to produce trimethylcyclopentanes, or alternatively the tertiary butyl alcohol is passed directly into the dimerization zone wherein it is dehydrated and dimerized to the trimethylcyclopentanes which in turn are aromatized to para-xylene by passing them over a chromia-alumina catalyst which has high selectivities for the aromatic.

3,836,604
BINDERS FOR THE ELECTROSTATIC POWDER-SPRAYING PROCESS
Hermann Hagemann, Cologne, Frank Wingler, Leverkusen, and Dieter Pollheide, Leichlingen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed May 31, 1972, Ser. No. 258,386
Claims priority, application Germany, June 4, 1971, P 21 27 684.6
Int. Cl. C08g *45/04*
U.S. Cl. 260—836 1 Claim

Copolymers of 25 to 60% by weight of styrene or its derivatives, 30 to 65% of (meth)acrylic esters [excepted (methacrylic acid methyl ester) which may be used in amounts up to 24% by weight] and 3 to 15% by weight of unsaturated copolymerizable carboxylic acids are homogeneously mixed with triglycidyl isocyanurate and optionally with pigments and levelling agents. The mixture is applied by electrostatic powder-spraying processes to metallic surfaces and cured at temperatures of about 130 to 220° C. The backed films of the mixture show outstanding bond strength and hardness coupled with elasticity, high gloss and weather resistance.

3,836,605

POLYCONDENSATES OF DIAMIDES, N,N'-UREAS AND FORMALDEHYDE ADMIXED WITH OXYMETHYLENE POLYMERS

Ernst Ricker, Frankenthal, Pfalz, Bruno Sander, Ludwigshafen (Rhine), Franz Schmidt and Erich Schwartz, Mannheim, and Heinrich Sperber and Hans Wilhelm, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Original application Apr. 19, 1968, Ser. No. 722,564, now abandoned. Divided and this application Mar. 8, 1973, Ser. No. 339,159

Claims priority, application Germany, Apr. 21, 1967, B 92,175, B 92,178

Int. Cl. C08g *37/32, 51/58*

U.S. Cl. 260—849 5 Claims

A process for the production of polycondensates by polycondensing in aqueous acid medium (A) diamides of dicarboxylic acids having at least four carbon atoms, (B) N,N'-substituted ureas and (C) formaldehyde, products obtained in this way and a stabilized moldable admixture of said polycondensates with oxymethylene polymers.

3,836,606

UNSATUPATED POLYESTER RESINS

Melvin E. Baum, Monroeville, Pa., assignor to Koppers Company, Inc.

No Drawing. Continuation of abandoned application Ser. No. 29,370, Mar. 20, 1970. This application Apr. 24, 1972, Ser. No. 247,214

Int. Cl. C08f *21/02*

U.S. Cl. 260—861 7 Claims

A crosslinkable unsaturated polyester resin, which can be used to prepare articles having improved electrical and thermal stability properties, is prepared by reacting maleic anhydride or fumaric acid with 1-cyclohexene-1,2-dicarboxylic anhydride, cyclohexanedimethanol and neopentyl glycol. Polymerizable compositions containing the aforementioned resins and a vinyl monomeric crosslinking agent and articles made from the polymerizable composition are disclosed also.

3,836,607

THERMOPLASTIC MOLDING COMPOSITION COMPRISING POLYBUTENE AND POLYPROPYLENE

Hans-Ulrich Finkmann and Bernhard Engeln, Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Filed July 28, 1972, Ser. No. 275,906

Claims priority, application Germany, Aug. 3, 1971, P 21 38 685.6

Int. Cl. C08f *29/12*

U.S. Cl. 260—897 A 3 Claims

Thermoplastic molding compositions for producing dimensionally stable and impact resistant shaped articles from a mixture of poly-1-butene and polypropylene, wherein 60–85 percent by weight of the composition is predominantly isotactic low pressure poly-1-butene having up to 5 mole percent of ethylene as a copolymer, a molecular weight of about 1,000,000 to 2,400,000 and a density of about 0.910 to 0.920 grams per cubic centimeter, and about 15–40 percent by weight of the composition is predominantly isotactic polypropylene produced in the gaseous phase having a molecular weight of about 1,000,000 to 1,600,000 and a density of about 0.890 to 0.896 grams per cubic centimeter.

3,836,608

PROCESS FOR SELF CONDENSING PHOSPHONITRILIC CHLOROESTERS AND PRODUCT

Borivoj Richard Franko-Filipasic, Morrisville, and Edward Francis Orwoll, Langhorne, Pa., and John Francis Start, Mercerville, N.J., assignors to FMC Corporation, New York, N.Y.

No Drawing. Filed Aug. 17, 1972, Ser. No. 281,318

Int. Cl. C07d *105/04;* C07f *9/24, 9/26*

U.S. Cl. 260—926 8 Claims

A novel process consisting of reacting a phosphonitrilic chloride with an alcohol or alkoxide of 1 to 12 carbon atoms to produce a partially esterified phosphonitrilic chloride, removing impurities from the chloroester and heating the ester to form a condensed polymeric phosphazene with P—O—P oxygen linkages. This new class of polymer phosphazenes, with P—O—P oxygen linkages, is unusually efficacious in rendering rayon flame-retardant.

3,836,609

PROCESS FOR ACYLATING DIALKYL ACYL PHOSPHONATES

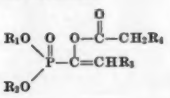
Peter Golborn, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed June 21, 1971, Ser. No. 155,296

Int. Cl. C07f *9/40*

U.S. Cl. 260—971 3 Claims

Compounds of the formula:



in which

R_1 and R_2 are alkyl groups;

R_3 is —H or an alkyl group; and

R_4 is —H, —Cl or an alkyl group

are produced by acylating a dialkyl acyl phosphonate under conditions of either acid or base catalysis with an alkanoic acid anhydride, halide or a mixture thereof. The dialkyl 1-alkanoyloxy-alk-1-enyl-phosphonates of this invention are useful as flame retarding agents for textile materials and in the production of polymers and copolymers which possess flame retardant properties.

3,836,610

PROCESS FOR MAKING AN O,O-DI(C_1–C_8 ALKYL) THIOPHOSPHORYL CHLORIDE

William R. Diveley, New Castle, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 7,262, Jan. 30, 1970. This application June 12, 1973, Ser. No. 369,351

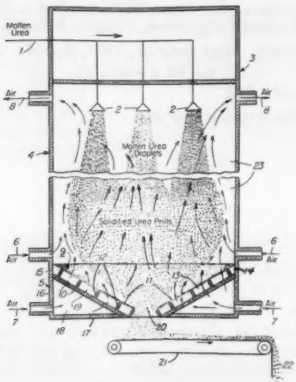
Int. Cl. C07f *9/14*

U.S. Cl. 260—986 12 Claims

Disclosed is a process for making from an O,O-di(C_1–C_8 alkyl) dithiophosphoric acid and chlorine a reaction product comprising the corresponding di(C_1–C_8 alkyl) thiophosphoryl chloride, which product is substantially free of sulfur monochloride, O-(C_1–C_8 alkyl) phosphoryl dichloride and bis[O,O-di(C_1–C_8 alkyl) thiophosphoryl] disulfide. In this process the acid, preferably dissolved in inert anhydrous solvent, is reacted in a temperature range from about —10 to about 10° C. with about one molar

equivalent of chlorine, whereby a reaction mixture containing sulfur monochloride is formed. The reaction mixture is established and maintained in a temperature range from about 85 to about 110° C. until it is substantially free of sulfur monochloride, and in preferred embodiments until the relatively thermally unstable sulfur that forms becomes more thermally stable. The resulting reaction mixture consists essentially of O,O-di(C_1–C_8 alkyl) thiophosphoryl chloride and sulfur. In preferred embodiments, the desired chloride can be distilled from the reaction mixture with the risk of an uncontrollable exothermic decomposition reaction being at a minimum.

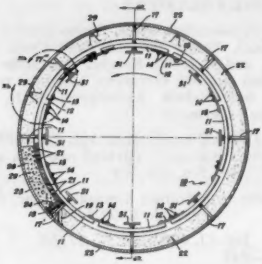
3,836,611
PROCESS FOR PRILLING UREA
Ivo Mavrovic, 530 E. 72nd St., New York, N.Y. 10021
Continuation-in-part of abandoned application Ser. No. 104,998, Jan. 8, 1971, which is a continuation-in-part of application Ser. No. 255,726, May 22, 1972. This application May 22, 1972, Ser. No. 255,760
Int. Cl. B01j *2/04*
U.S. Cl. 264—14 **4 Claims**



Urea is prilled by spraying urea droplets downwardly into a solidification zone where it is contacted with a substantially inert gas. Prills are directed into a collector by diverting their flow by directing a gas through a perforated, inverted cone or pyramid located at the bottom of and in communication with said zone.

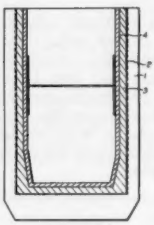
3,836,612
METHOD FOR LINING ROTARY KILNS
Larry L. Mann, Mexico, Mo., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Original application Feb. 18, 1971, Ser. No. 116,484, now Patent No. 3,733,045, dated May 15, 1973. Divided and this application Jan. 11, 1973, Ser. No. 322,894
Int. Cl. F27d *1/16*
U.S. Cl. 264—30 **5 Claims**

A method for lining rotary kilns with monolithic castable refractory comprizing placing rings made of segments preferably adjustably attached to each other so the rings can be adjusted to the desired circumference, the rings having removable spacer elements which support the rings on and space them from the kiln shell. Forms are attached to the rings and castable refractory placed between the forms and the kiln shell to form the lining. The lining is cast in sections, the kiln being rotated so that the casting of each section is done in a downward direction. The spacer elements are removed



from each section prior to casting refractory material in that section.

3,836,613
METHOD OF MAKING LINER IN AN INDUCTION MELTING FURNACE
Karl Ernst Granitzki, Viersen, Paul Schiefer, Hennef-Uckerath, and Heinrich Hess, Troisdorf, Germany, assignors to VFG Vertriebsgesellschaft fur feuerfeste und giesstechnische Erzeugnisse mbH, Viersen, Germany
Filed Nov. 2, 1971, Ser. No. 194,949
Claims priority, application Germany, Nov. 4, 1970, P 20 54 136.0
Int. Cl. F27d *1/16*
U.S. Cl. 264—30 **9 Claims**



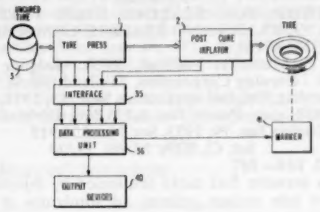
A method of preparing a self supporting liner for an induction melting furance is disclosed.

A dry refractory tertiary quartzite granular composition is filled between the furnace wall and a form defining the inner shape of the liner and densified as by vibration applied to the form. The form is removed to leave a self-supporting liner. The exposed inner surface of the liner is impregnated with a binder to a depth less than the total thickness of the liner to form an inner strengthened shell having a thickness of from 1–8 mm. The inner shell is then sintered leaving the outer zone of said linear unsintered.

3,836,614
TIRE CURING MONITORING AND CONTROL METHOD
Ernst J. Neugroschl, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Original application Aug. 6, 1968, Ser. No. 750,512, now Patent No. 3,659,974. Divided and this application Nov. 5, 1971, Ser. No. 196,243
Int. Cl. B29h *5/00, 17/00*
U.S. Cl. 264—40 **1 Claim**

In the process of molding and curing pneumatic tires, a means senses certain selected quantities (e.g., cure cycle

length) in the tire press and, in some applications, a post cure inflator, and feeds the sensed signals to a digital computer. The computer scans the input and compares it with pre-stored ideal values. If the sensed data differs from the stored values by too great a degree, the computer provides an appropriate output. Further, the computer may control a tire marker to mark those tires which fail the comparison. In addition, by feeding information to the computer from a plurality of presses, accurate inventory counts, production requirements, production and press break-down history, and so forth, may be maintained automatically.



3,836,615

METHOD OF FORMING CYLINDRICAL FOAMED CELLULOSE RODS ENCLOSED IN A RIGID SKIN

Saunders E. Jamison, Summit, and Gene H. Anthony, Whitehouse Station, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Original application July 1, 1966, Ser. No. 562,095, now Patent No. 3,554,202, dated Jan. 12, 1971. Divided and this application Sept. 8, 1970, Ser. No. 70,140

Int. Cl. B29d 27/00; B29f 3/01
U.S. Cl. 264—47 5 Claims

A cylindrical rod particularly suitable as a cigarette filter is described which is comprised predominantly of foamed fibrous cellulose and a water-insoluble polymer having a glass transition temperature of at most 50° C. and a minor amount of wetting agent, the weight ratio of the polymer to the fibrous cellulose being at least about 0.4, said rod being encased by a skin of said polymer.

3,836,616

METHOD OF PRODUCING FIBERS HAVING POROUS STRUCTURES

Toshiyuki Kobashi, Tsukubo-gun, Okayama Prefecture, and Noboru Abe, Okayama, Japan, assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed July 9, 1973, Ser. No. 377,700

Claims priority, application Japan, Aug. 16, 1972, 47/81,977

Int. Cl. B29h 7/20
U.S. Cl. 264—50 5 Claims

There are disclosed improvements in the process of preparing porous fibers by wet-spinning a spinning composition containing dispersed gas, the improvements including preparation of spinning solutions satisfying specific mathematic relationships as to surface tension and viscosity thereof and as to relative volume of solution and gas as well as limiting particle size of the dispersed gas bubbles.

3,836,617

PROCESS OF PRODUCING A FOAMED POLYSTYRENE RESIN MOLDED PRODUCT

Jay A. Lankheet, 1329 Bayview Drive, Holland, Mich. 49423

No Drawing. Filed Dec. 15, 1972, Ser. No. 315,335

Int. Cl. B29d 27/00
U.S. Cl. 264—51 4 Claims

A process for producing strong, lightweight, cellular molded products in which a mixture of expandable polystyrene beads, fine particles of inorganic material, water, thermosetting polyester resin and catalyst is heated to expand the beads and cure the resin.

3,836,618

PROCESS FOR THE UNIFORM DISTRIBUTION OF A DRUG ON A GRANULATED BASE

Robert T. Stevens, Springfield, Pa., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Dec. 23, 1971, Ser. No. 211,707

Int. Cl. A61k 9/00; B32b 31/12
U.S. Cl. 264—101 8 Claims

A method for making tablets containing a solid biologically active compound in non-granular form fixed to the external surface of a granular base material by:

(a) combining a predetermined amount of said biologically active compound with an inert volatile liquid,
(b) contacting said liquid and said active compound with an agitated mass of said granular base, and
(c) removing said voltaile liquid,
(d) directly compressing the coated granular base to form a tablet.

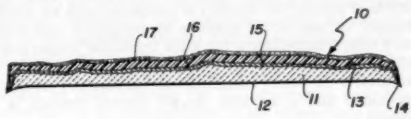
3,836,619

METHOD OF FORMING ARTIFICIAL STONE

Stanley C. Volent, West Boylston, Mass., assignor to Dacor Manufacturing Co., Inc., Worcester, Mass.

Filed Jan. 6, 1972, Ser. No. 215,879

Int. Cl. B44d 1/094
U.S. Cl. 264—131 3 Claims



Method of forming artifiical stone, comprising molding a main body, spraying the body with a color layer, spraying a transparent layer over the color layer, applying a layer of sand to the transparent layer while it is still tacky and curing.

3,836,620

METHOD OF FORMING POLYAMIDE-POLYETHYLENE COMPOSITE FILMS

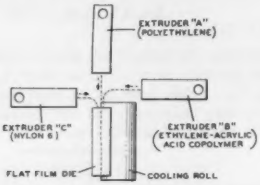
Mahendra Bhuta, Mendham, and William Sacks, Gillette, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Original application Feb. 26, 1971, Ser. No. 119,325, now Patent No. 3,697,368. Divided and this application June 27, 1972, Ser. No. 266,785

Int. Cl. B29f 3/08
U.S. Cl. 264—171 6 Claims

Composite films are provided by coextruding a polyamide with at least one combination of polymeric ma-

terials selected from the group of (1) (a) an ethylenic acidic polymer and (b) a polyolefinic hydrocarbon; or (2) a mixture of an ethylenic acidic polymer and a polyolefinic hydrocarbon or (3) (a) a mixture of an ethylenic acidic polymer and a polyolefinic hydrocarbon and (b) a polyolefinic hydrocarbon in a novel process which provides films having an excellent balance of properties including high strength, clarity and low moisture and gas permeability.



3,836,621

PROCESS FOR THE HOT DRAWING OF POLYBENZIMIDAZOLE FIBROUS MATERIALS WHEREIN A HEATED DRAW SURFACE IS EMPLOYED

Arthur E. Prince, Jr., Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 239,898, Mar. 31, 1972. This application Nov. 3, 1972, Ser. No. 303,456

Int. Cl. D01d 5/12

U.S. Cl. 264—210 F 8 Claims

Polybenzimidazole fibrous materials are known to possess an inherent tendency to absorb moisture from the atmosphere. An improved process is provided for drawing a polybenzimidazole fibrous material while in contact with a heated draw surface (e.g., one or more hot shoes). Immediately prior to contact with the heated draw surface the polybenzimidazole fibrous material while in association with a minor quantity of moisture (e.g., about 0.5 to 2 percent by weight) is contacted with an auxiliary heated surface in the absence of elongation and brought to a temperature below the glass transition temperature of the polybenzimidazole with the simultaneous removal of moisture. A draw technique of satisfactory stability is provided and a superior drawn fibrous product is produced.

3,836,622

METHOD OF FORMING PIPES

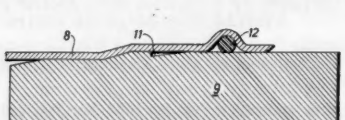
Sten Ragnar Sporre, Forsheda, Sweden, assignor to Forsheda Ideutveckling AB, Varnamo, Sweden

Filed June 30, 1972, Ser. No. 267,999

Claims priority, application Sweden, July 1, 1971, 8,527/71

Int. Cl. B29d 3/00

U.S. Cl. 264—249 2 Claims



A method of forming pipes wherein the pipe wall may be constructed from fiber or threaded reinforced plastic and is formed on a mandrel and the pipe wall is provided with an inner annular wall for receiving element in the form of a ring which is stretched onto the mandrel and the pipe wall is formed around the mandrel and the sealing ring.

3,836,623

METHOD FOR SEALING HIGH PRESSURE FUEL TANKS AND SEALING COMPOSITION THEREFOR

James E. Matherly, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Original application Sept. 13, 1971, Ser. No. 180,158, now Patent No. 3,755,380. Divided and this application Jan. 19, 1973, Ser. No. 324,917

Int. Cl. B29c 13/00, 25/00

U.S. Cl. 264—267 11 Claims

High pressure fuel tanks are sealed by injecting under pressure into sealant grooves an admixture of an inert permanently plastic non-curing sealing composition with organic peroxide where the amount of organic peroxide is sufficient to alter the flowability of the sealing composition but insufficient to cure the sealing composition to a non-reinjectable material after the organic peroxide has been activated and thereafter heating the fuel tank above the activation temperature of the organic peroxide. A mixture of poly-3,3,3-trifluoropropylmethylsiloxane fluid, poly-3,3,3-trifluoropropylmethylsiloxane gum, an extending filler, a polytetrafluoroethylene resin and a small amount of an organic peroxide is a particular inert permanently plastic non-curing sealing composition admixture.

3,836,624

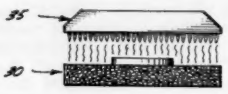
METHOD OF PRODUCING THREE-DIMENSIONAL FOAM PLASTIC FORMS

Byron S. Ferris, 3264 SW. Evergreen Terrace, Portland, Oreg. 97201

Filed Nov. 6, 1972, Ser. No. 303,805

Int. Cl. B29d 27/100

U.S. Cl. 264—321 5 Claims



A method for producing three-dimensional forms of foam plastic wherein a heat-resistant mask is applied to a surface of a heat-collapsible foam body, and the mask-bearing body is exposed to a spaced source of heat energy for a time sufficient to collapse the unmasked areas of the foam.

3,836,625

REPROCESSING OF SPENT NUCLEAR FUEL

Lothar Schäfer, Steinbach, Taunus, and Bernhard Wojtech, Bad Soden, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Nov. 22, 1971, Ser. No. 201,216

Claims priority, application Germany, Nov. 24, 1970, P 20 57 760.0

Int. Cl. B01d 11/00

U.S. Cl. 423—10 3 Claims

Reprocessing of nuclear fuel is improved by recovering uranium and thorium during an additional anticyclic liquid-liquid extraction process which is applied to the

organic phase of the first extraction cycle. The improvement of the process is based on the addition of ethylenediaminetetra-acetic acid (EDTA) to the aqueous reextracting solution.

3,836,626

CANINE DISTEMPER VIRUS VACCINE

John F. Lavender, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Jan. 29, 1973, Ser. No. 327,552
Int. Cl. C12k *9/00, 5/00*
U.S. Cl. 424—89 11 Claims

A canine distemper virus vaccine is produced by growth of an attenuated canine distemper virus in

LLC—MK_2

monkey kidney cell line culture.

3,836,627

PROCESS FOR MAKING MAGNESIUM OXIDE AND MAGNESIUM HYDROXIDE FROM CALCINED DOLOMITE AND MAGNESIUM CHLORIDE

Klaus Wiensz, Wulfrath, and Friedrich Bischoff, Hagen, Germany, assignors to Kali und Salz Aktiengesellschaft, Kassel, Germany

No Drawing. Filed Feb. 29, 1972, Ser. No. 230,527
Int. Cl. C04b *3/00;* C01f *5/06, 5/14, 11/02*
U.S. Cl. 423—169 4 Claims

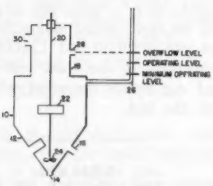
Magnesium oxide or magnesium hydroxide are made by forming an intimate mixture of calcined dolomite and the stoichiometric amount of magnesium chloride (relative to the CaO contents of the dolomite), then dehydrating the mixture by heating it above 100° C., introducing the thus formed solid into water and recovering the magnesium oxide or -hydroxide residue by filtration.

3,836,628

CRYSTAL GROWTH MODIFIER

Joseph M. Ilardi, Kendall Park, and Eric Rau, Trenton, N.J., assignors to Intermountain Research and Development Corporation, Green River, Wyo.

Filed May 22, 1972, Ser. No. 255,417
Int. Cl. C01d *7/12, 7/40*
U.S. Cl. 423—206 3 Claims



Soda ash is prepared from crude trona containing organic impurities by calcining the crude trona to crude soda ash at a temperature too low to remove the organics, preparing a clarified saturated aqueous sodium carbonate solution from the crude ash, and crystallizing sodium carbonate monohydrate from the solution without removing organics, by having present during the crystallization a small quantity—about 4 to 400 parts per million—of a mineral oil solution of a surfactant which is soluble in the mineral oil and not soluble in the sodium carbonate solution, but which lowers the surface tension between the oil and the carbonate solution.

3,836,629

METHOD OF INHIBITING THE GROWTH OF LARVAE AND NYMPHS WITH AZASTEROIDS

Paul D. Klimstra, Northbrook, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 124,499, Mar. 15, 1971. This application Aug. 17, 1972, Ser. No. 281,492
Int. Cl. A01n *9/20*
U.S. Cl. 424—238 1 Claim

Described herein is a method of inhibiting the growth of larvae or nymphs of an insect which converts dietary C_{28} and C_{29} phytosterols to cholesterol or which utilizes dietary cholesterol in its metabolism by administering to said larvae or nymphs an effective amount of a hypocholestrolemic 3-etherified or 3-acylated 3-hydroxyazasteroid. New 3-cycloalkoxy, 3-(cycloalkyl)alkoxy and 3-(cycloalkyl)alkanoyloxy derivatives of 17β-[(N-alkyl-N-dialkylaminoalkyl)amino]androst-5-en-3-ols, corresponding saturated compounds and related monoazasteroids are also described. The subject compounds can be prepared by etherification or acylation of the corresponding 3-hydroxyazasteroids or by addition of the 17-side chain to the corresponding 3-etherified or 3-acylated 17-keto compounds. Anti-larval and anti-nymphal compositions containing the subject compounds are described also.

3,836,630

METHOD FOR TREATMENT OF GAS CONTAINING SULFUR DIOXIDE

Masaaki Noguchi and Hiroshi Yanagioka, Tokyo, Toshio Kanai, Yokohama, Kazuo Nishiguchi and Hideo Hashimoto, Sagamihara, Katuhiro Abe and Tomio Masuko, Yokohama, Zenichi Mashino, Kawasaki, and Yosio Kogawa, Yokohama, Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan

Filed Mar. 22, 1972, Ser. No. 237,035
Claims priority, application Japan, Mar. 29, 1971, 46/18,192; June 28, 1971, 46/47,000; Aug. 6, 1971, 46/59,391
Int. Cl. C01b *17/00*
U.S. Cl. 423—242 7 Claims

A gas containing sulfur dioxide is treated in the sulfurous acid-absorbing process to have the sulfur dioxide present in the gas absorbed by dilute sulfuric acid and then the solution containing the absorbed sulfur dioxide is treated in the oxidizing process under conditions suitable for the oxidation of sulfurous anhydride. The sulfur dioxide contained in the gas can be removed substantially completely by thus allowing the SO_2 absorption and the SO_2 oxidation to be accomplished under respectively suitable conditions in separate processes. The gas can be treated advantageously without requiring the waste water to be discharged out of the system when part of the formed sulfuric acid is used as the absorbent liquid in the absorbing process, the remaining portion of sulfuric acid is used for reaction with a calcium-containing alkali solution to produce harmless gypsum, and the mother liquid is recycled for use as the wash liquid or absorbent liquid for the gas.

3,836,631

METHOD OF MAKING URANIUM SESQUICARBIDE

Hiroaki Tagawa and Kimio Fujii, Naka-gun, Japan, assignors to Eiji Munekata, Tokyo, Japan

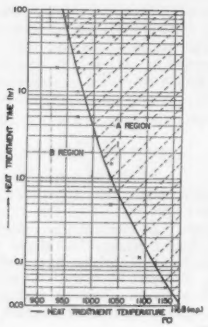
No Drawing. Filed July 18, 1972, Ser. No. 272,794
Claims priority, application Japan, July 19, 1971, 46/53,107
Int. Cl. C01g *43/00*
U.S. Cl. 423—256 4 Claims

This invention relates to a method of making uranium sesquicarbide U_2C_3 by mixing uranium dicarbide UC_2 with metal oxide and subjecting the mixture to heating vacuum.

ERRATUM

For Class 423—345 see:
Patent No. 3,836,673

3,836,632
METHOD FOR IMPROVING TRANSPARENCY OF GADOLINIUM MOLYBDATE SINGLE CRYSTAL
Seikichi Akiyama, Kokubunji, and Hirotsugu Kozuka and Koichi Megumi, Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed July 28, 1972, Ser. No. 276,175
Int. Cl. C01g *57/00*
U.S. Cl. 423—263 **19 Claims**



In cases where a gadolinium molybdate single crystal of low transparency is produced this crystal is subsequently subjected to heat treatment under specified conditions of temperature and time, thereby to improve its transparency. In accordance with the present method, when a crystal having, for example, a light permeability of 20% at a wavelength of 6,328 A. was heat-treated at 1,100° C. for 5 hours, the light permeability became 73% and was improved by 265%.

ERRATUM

For Class 423—322 see:
Patent No. 3,836,675

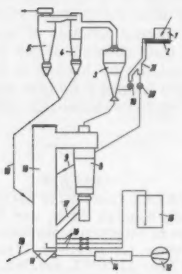
3,836,633
PROCESS FOR THE PRODUCTION OF COPPER SILICATES
Helmut Beschke, Grossauheim, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
No Drawing. Filed July 20, 1971, Ser. No. 164,428
Claims priority, application Germany, July 23, 1970, P 20 36 554.2
Int. Cl. C01b *33/20*
U.S. Cl. 423—326 **8 Claims**

A process for the production of a copper silicate by precipitation of the silicate from a reaction medium consisting essentially of an aqueous solution of an alkali silicate and a copper salt, wherein the improvement comprises precipitating the copper silicate from the solution at an elevated temperature. The copper silicates are useful as additives to coatings such as paints, and especially as anti-fouling agents in coatings for ships.

3,836,634
PRODUCTION OF NICKEL FLUORIDE
Jerome Saldick, Princeton, N.J., assignor to FMC Corporation, New York, N.Y.
No Drawing. Continuation of application Ser. No. 798,130, Feb. 10, 1969, now Patent No. 3,607,013, dated Sept. 21, 1971. This application Mar. 5, 1971, Ser. No. 121,554
Int. Cl. C01g *53/08*
U.S. Cl. 423—489 **1 Claim**

A highly active, anhydrous nickel fluoride which is resistant to pick-up of atmospheric water and is superior as a battery element in high energy lithium-nickel fluoride batteries, is produced by passing anhydrous gaseous hydrogen fluoride over amorphous basic nickel carbonate at a temperature of between 150°–300° C. and preferably 225°–250° C.

3,836,635
PROCESS FOR PRODUCING ALUMINUM FLUORIDE
Lothar Reh, Bergen Enkheim, Eberhard Bohm, Frankfurt am Main, and Gunter Schoene, Kelsterbach, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany
Filed Jan. 5, 1972, Ser. No. 215,611
Claims priority, application Germany, Feb. 10, 1971, P 21 06 306.9
Int. Cl. C01f *7/50*
U.S. Cl. 423—489 **6 Claims**



Aluminum fluoride is produced from hydrogen fluoride and aluminum hydroxide or hydrated alumina in an expanded fluidized bed. A solid gas mixture is discharged at the top of the bed and the solids therein are separated and recycled into the fluid bed. Liquid hydrogen fluoride is supplied directly to the fluid bed above the bottom grate thereof but below the point where the solids are recycled into the bed.

3,836,636
OXIDATIVE TREATMENT OF HUMAN HAIR WITH AN ACYLATED GLYCOLURIL AND AN OXIDIZER
Dieter Kuhling, Monheim, Rhineland, Germany, assignor to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany
No Drawing. Continuation-in-part of abandoned application Ser. No. 787,597, Dec. 27, 1968. This application May 7, 1971, Ser. No. 141,373
Claims priority, application Germany, Dec. 30, 1967, P 16 95 219.5
Int. Cl. A61k *7/12*
U.S. Cl. 424—62 **8 Claims**

The method of oxidative treatment of human hair which comprises treating said hair with an aqueous solution of (1) water-soluble peroxyhydrates or hydrogen peroxide and (2) an activator acylated glycoluril.

3,836,637

STABLE HAIR LACQUER GEL COMPOSITIONS

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Continuation-in-part of application Ser. No. 580,204, Sept. 19, 1966, now Patent No. 3,740,421. This application Jan. 2, 1973, Ser. No. 320,521

The portion of the term of the patent subsequent to Feb. 1, 1989, has been disclaimed

Int. Cl. A61k *7/00, 7/10*

U.S. Cl. 424—70 **5 Claims**

Stable hair lacquer gel compositions are prepared from alkylmonoesters of poly(methylvinylether/maleic acid) and as a matrix therefor, aqueous gels of certain polyoxyethylene polyoxypropylene block copolymers.

3,836,638

CERTAIN HYDROXYLATED POLYMERS USEFUL IN FORMING PESTICIDAL PHOSPHATE GELS

Ronald S. Smith, Gilroy, Jerome G. Kuderna, Jr., Modesto, and Richard C. Potter, Lafayette, Calif., assignors to Shell Oil Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 166,978, July 28, 1971. This application May 3, 1973, Ser. No. 356,858

Int. Cl. A01n *9/36*

U.S. Cl. 424—78 **10 Claims**

A gel-like composition useful for controlling invertebrate pests comprising an activated vinyl phosphorus ester admixed with a hydroxylated polymer, compatible with said ester, a certain proportion of said ester being interacted with said hydroxylated polymer to form a cross-linked polymer network.

ERRATUM

For Class 424—89 see:
Patent No. 3,836,626

3,836,639

USE OF AROMATIC GLYOXALS, THEIR HYDRATES AND BISULFITE ADDITION SALTS IN REDUCING BLOOD PLATELET AGGREGATION

Daniel M. Teler, Devon, Charles J. Guinosso, King of Prussia, Stanley C. Bell, Penn Valley, and Richard L. Fenichel, Wyncote, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Sept. 19, 1973, Ser. No. 398,898

Int. Cl. A61k *17/00, 27/00*

U.S. Cl. 424—101 **9 Claims**

Certain aromatic glyoxal derivatives, their hydrates and bisulfite addition salts are useful anti-blood platelet aggregation agents *in vitro* and *in vivo*.

3,836,640

METHOD FOR THE CHEMICAL STERILIZATION OF MALE ANIMALS

Kenneth A. Laurence, 38 Pamela Lane, Valhalla, N.Y. 10595

No Drawing. Filed Apr. 28, 1972, Ser. No. 248,409

Int. Cl. A61k *17/06*

U.S. Cl. 424—108 **8 Claims**

Male animals can be sterilized by administering a foreign luteinizing hormone to the animal before it has attained puberty. The luteinizing hormone must be capable of producing an antibody in the animal which has cross-reactivity with the gonadotropins normally produced by the animal. The presence of the antibody deters the maturation of the gonads and adnexal glands and inhibits spermatogenesis at the spermatogonial level.

3,836,641

TOOTHPASTES

Ronald Hoyles, Epsom Downs, and Stanley Alan Mitchell, Bagshot, England, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Oct. 2, 1972, Ser. No. 294,419

Claims priority, application Great Britain, Oct. 5, 1971, 46,231/71

Int. Cl. A61k *7/16*

U.S. Cl. 424—49 **4 Claims**

A translucent or transparent toothpaste which contains as abrasive agent a silica-alumina xerogel or silica-magnesia xerogel.

3,836,642

GRANATICIN B AND METHOD OF PREPARING SAME

Walter Keller, Dubendorf, Zurich, Switzerland, and Hans Zaehner, Tubingen, Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 15, 1967, Ser. No. 616,345

Claims priority, application Switzerland, Feb. 22, 1966, 2,510/66

Int. Cl. A61k *21/00*

U.S. Cl. 424—121 **2 Claims**

The antibiotic Granaticin B, a red substance having the empirical formula $C_{28}H_{30}O_{12}$, molecular weight 558, yielding on acid hydrolysis granaticin of empirical formula $C_{22}H_{20}O_{10}$ and a trideoxyhexose $C_6H_{12}O_3$ (L-rhodinose).

3,836,643

PESTICIDAL COMPOSITIONS CONTAINING PHOSPHORIC ESTERS AND DIVALENT SULPHUR COMPOUNDS

Claude Hennart, Aubervilliers, France, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,137

Int. Cl. A01n *9/36, 11/06*

U.S. Cl. 424—175 **8 Claims**

Pesticidal composition comprising: a pesticidal, phosphoric ester the molecule of which has at least one alkyl group of 1 to 3 carbon atoms, 0.05 to 10% of an agent stabilising the said ester against decomposition by protonisation, together with adjuvants characterised in that the stabilising agent comprises at least one sulphur compound containing per molecule at least one divalent sulphur atom of which one valence is bonded to an atom chosen from sulphur, carbon, nitrogen, hydrogen, and metals capable of giving a salt, the other valence being bonded to an atom chosen from hydrogen, the carbon atom already noted, a second carbon atom, the nitrogen atom already noted, a second nitrogen atom, the metal atom already noted in the case of a metal of valence greater than one, a second atom of metal and oxygen when the first valence is not attached to an atom of hydrogen, the proportion of sulphur calculated with reference to the weight of the sulphur compound being between 5 and 99%. Process for stabilising a phosphoric ester of which the molecule possesses at least one alkyl group containing 1 to 3 carbon atoms characterised in that there is added to the phosphoric ester or to a mixture which contains it 0.05 to 10% calculated on the weight of the phosphoric acid ester of an agent capable

of stabilising the said phosphoric ester against protonisation and comprising at least one sulphur compound such as that defined thereupon.

3,836,644

TREATMENT OF WOUNDS

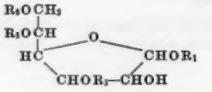
Gerhard Wilhelmi, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Dec. 15, 1972, Ser. No. 315,733

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 **8 Claims**

The treatment of wounds by orally administering a pharmaceutical preparation containing a compound of the formula I



(I),

wherein R_1 is hydrogen or alkyl with up to 7 carbon atoms, and R_3, R_5 and R_6 each independently is hydrogen, alkyl with up to 7 carbon atoms, alkenyl with up to 7 carbon atoms, benzyl, halogeno-benzyl, (C_1–C_7-alkyl)-benzyl, (C_1–C_7-alkoxy)-benzyl or trifluoromethyl-benzyl.

3,836,645

ANTI-VIRAL COMPOSITIONS CONTAINING 3-DEAZA NUCLEOSIDES

Richard L. Tolman, Costa Mesa, and Robert W. Sidwell, Irvine, Calif., assignors to ICN Pharmaceuticals, Inc., Irvine, Calif.

No Drawing. Filed June 23, 1972, Ser. No. 265,482

Int. Cl. A61k *13/00, 27/00*

U.S. Cl. 424—180 **19 Claims**

The use of 3-deazacytidine and 3-deazauridine as anti-viral agents is disclosed. Such compounds have demonstrated significant ability to inhibit the development of RNA viruses.

3,836,646

PHARMACEUTICAL COMPOSITION ESSENTIALLY CONTAINING, AND METHOD OF TREATMENT WITH, $\Delta^{4,20,22}$-BUFATRIENOLIDE RHAMNOSIDE ETHERS

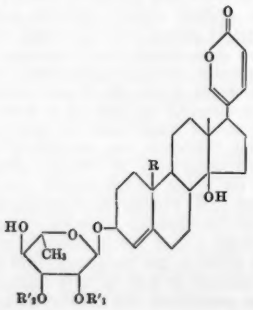
Hugo Kubinyi, Leimen, Germany, assignor to Knoll A.G. Chemische Fabriken, Ludwigshafen (Rhine), Germany

No Drawing. Original application Feb. 25, 1970, Ser. No. 14,218, now Patent No. 3,726,857. Divided and this application Dec. 1, 1972, Ser. No. 311,249

Int. Cl. A61k *27/14*

U.S. Cl. 424—182 **15 Claims**

Cardioactive $\Delta^{4,20,22}$-bufatrienolide rhamnoside ethers of the formula



wherein R is methyl or formyl; R_1 and R_2 taken alone are hydrogen, lower alkyl, or acetyl; R_1 and R_2 taken together are

R_3 is hydrogen, lower alkyl, or acetyl; and wherein at least one of R_1, R_2, or R_3 is alkyl, and the method of preparing them by reaction of the corresponding 2',3',4'-hydroxy compounds or 2',3'-isopropylidene-4'-hydroxy compounds with an alkyl halide, optionally followed by hydrolysis of the isopropylidene group and/or acetylation of unetherified hydroxy groups.

3,836,647

WASH-RESISTANT SKIN PREPARATION

Paul M. Lange, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 83,149, Oct. 22, 1970, which is a continuation-in-part of application Ser. No. 645,591, June 13, 1967, both now abandoned. This application May 7, 1973, Ser. No. 358,254

Int. Cl. A01n *9/00;* **A61k** *21/00;* **A61l** *13/00*

U.S. Cl. 424—184 **8 Claims**

The present invention relates to novel skin preparations which, when applied to the extremities or other parts of the body will resist removal from the surface of the skin by repeated washings or the like. Illustrative of the skin preparations of this invention is a mixture consisting essentially of a trimethylsilyl endblocked diorganopolysiloxane, a hydroxyl or alkoxyl endblocked diorganopolysiloxane that is compatible with the above, a benzene-soluble organosilicon resin copolymer, and a pharmaceutically effective medicament for the skin. The skin preparations can be in the form of ointments, emulsions, dispersions, or as solutions which have been prepared in a nontoxic, volatile solvent. It has been found that the preferred form is as a dispersion. This invention also relates to methods for preventing irritation of the skin by water or water-borne irritants which comprise applying thereto the skin preparations disclosed herein.

3,836,648

TREATMENT OF CANINE DISTEMPER WITH A MICROBIAL PRODUCT DERIVED FROM THE BACTERIUM *ACHROMOBACTER STENOHALIS*

Joseph K. Chang, 3–21, 6-chome Seijomachi, Setagaya-ku, Tokyo, Japan

No Drawing. Filed Aug. 16, 1971, Ser. No. 172,289

Int. Cl. A61k *27/00*

U.S. Cl. 424—195 **7 Claims**

Canine distemper is treated by administering to the animal a therapeutic agent containing the filtrate of an admixture of water and inactivated bacteria belong to *Achromobacter stenohalis.*

3,836,649

ECTOPARASITICIDAL COMPOSITIONS AND PROCESS FOR THEIR PREPARATION

Otto Telle, Cologne, and Hans-Heinz Molls and Karl-Ernst Fetting, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 16, 1973, Ser. No. 333,037

Claims priority, application Germany, Feb. 24, 1972, P 22 08 618.6

Int. Cl. A61k *27/00;* **A61l** *23/00*

U.S. Cl. 424—203 **4 Claims**

Ectoparasiticidal aqueous suspensions of O,O-diethyl-O-(3-chloro - 4 - methylcoumarin-7-yl)thionophosphate which maintain their activity after repeated use are prepared by comminuting the compound in an aqueous medium and in the presence of a dispersing agent to an average particle size of from about 0.3 to about 1.5μ with 80% of the particles having a size less than 1μ.

3,836,650

METHOD FOR COMBATING MAREK'S DISEASE IN POULTRY

Joseph Bernard Schleicher, Lake Bluff, and William Rodney Roderick, Libertyville, Ill., assignors to Abbott Laboratories, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 119,056, Feb. 25, 1971, now Patent No. 3,767,795. This application June 8, 1973, Ser. No. 366,933
Int. Cl. A61k 27/00
U.S. Cl. 424—212 4 Claims

A method of preventing or treating Marek's disease in poultry by administering phosphonoacetic acid or its salts.

ERRATUM

For Class 424—238 see:
Patent No. 3,836,629

3,836,651

NOVEL ORAL CONTRACEPTIVE COMBINATION

Harry W. Rudel and Fred A. Kincl, New York, N.Y., assignors to Biological Concepts, Inc., New York, N.Y.

No Drawing. Filed Feb. 22, 1972, Ser. No. 228,365
Int. Cl. A61k 17/00
U.S. Cl. 424—239 8 Claims

A method for the control of the ovulatory cycle comprises administering orally to a woman during a period of at least about 28 days in consecutive sequence, beginning on the fifth day of the menstrual cycle, and continuing for a period of 20 to 21 days thereafter, a daily single dosage of a combination of about 1 part by weight of an estrogenic substance and from about 7 to 14 parts by weight of a progestational substance, the amount of estrogenic substance, expressed as ethynyl estradiol, or equivalent thereof, being not more than 0.05 mg. per day.

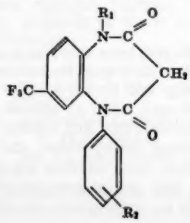
3,836,652

PHARMACEUTICAL COMPOSITIONS CONTAINING A 5-PHENYL-7-TRIFLUOROMETHYL-1H-1,5-BENZODIAZEPINE-2,4-DIONE

Karl Heinz Weber, Gau-Algesheim, Karl Zeile and Peter Danneberg, Ingelheim am Rhein, and Rolf Giesemann, Bingen, Germany, and Karl Heinz Hauptmann, deceased, late of Ingelheim am Rhein, Germany, by Maria Hauptmann, heir, Bonn (Rhine), Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

No Drawing. Application Feb. 1, 1971, Ser. No. 111,713, now Patent No. 3,707,539, which is a continuation-in-part of application Ser. No. 89,482, Nov. 13, 1970, which in turn is a continuation of application Ser. No. 703,188, Feb. 5, 1968, both now abandoned. Divided and this application Sept. 27, 1972, Ser. No. 292,749
Claims priority, application Germany, Feb. 7, 1967, B 91,071; Jan. 18, 1968, B 96,281, B 96,282
The portion of the term of the patent subsequent to Sept. 18, 1990, has been disclaimed
Int. Cl. A61k 27/00
U.S. Cl. 424—244 3 Claims

Psychosedative and anticonvulsive pharmaceutical compositions containing as an active ingredient a compound of the formula



wherein

R_1 is hydrogen, alkyl of 1 to 3 carbon atoms, hydroxyalkyl of 2 to 3 carbon atoms, allyl or (cycloalkyl of 3 to 6 carbon atoms)-methyl, and R_2 is hydrogen, halogen, trifluoromethyl or methoxy;

and a method of inducing psychosedation and suppressing convulsions in a warm-blooded animal therewith.

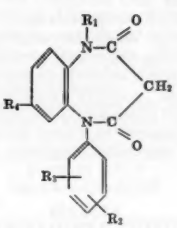
3,836,653

PHARMACEUTICAL COMPOSITIONS CONTAINING A 5-PHENYL-7-BROMO-1H-1,5-BENZODIAZEPINE-2,4-(3H,5H)-DIONE

Karl Heinz Weber, Gau-Algesheim, Karl Zeile and Peter Danneberg, Ingelheim am Rhein, and Rolf Giesemann, Bingen, Germany, and Karl Heinz Hauptmann, deceased, late of Ingelheim am Rhein, Germany, by Marie Hauptmann, heir, Bonn (Rhine), Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

No Drawing. Application Feb. 1, 1971, Ser. No. 111,715, now Patent No. 3,711,509, which is a continuation-in-part of application Ser. No. 89,482, Nov. 13, 1970, which in turn is a continuation of application Ser. No. 703,188, Feb. 5, 1968, both now abandoned. Divided and this application Oct. 30, 1972, Ser. No. 301,896
Claims priority, application Germany, Feb. 7, 1967, B 91,071; Jan. 18, 1968, B 96,281, B 96,282
The portion of the term of the patent subsequent to Sept. 18, 1990, has been disclaimed
Int. Cl. A61k 27/00
U.S. Cl. 424—244 3 Claims

Psychosedative and anticonvulsive pharmaceutical containing as an active ingredient a compound of the formula



wherein

R_1 is hydrogen, straight or branched alkyl of 1 to 5 carbon atoms, hydroxy-alkyl of 2 to 4 carbon atoms or di(alkyl of 1 to 4 carbon atoms) amino-alkyl of 2 to 4 carbon atoms,

R_2 is halogen, trifluoromethyl or methoxy,

R_3 is hydrogen, halogen, methyl or ethyl, and

R_4 is hydrogen, fluorine or chlorine;

and a method of inducing psychosedation and suppressing convulsions in a warm-blooded animal therewith.

3,836,654

COMPOSITION CONTAINING HEXETIDINE AND 2-METHYL-2-NITRO-1,3-DIMORPHOLINOPROPANE

Edward B. Hodge, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

No Drawing. Filed Apr. 12, 1973, Ser. No. 350,426
Int. Cl. A61k 27/00
U.S. Cl. 424—248 3 Claims

A composition consisting essentially of 5-amino-1,3-bis (2-ethylhexyl) - 5 - methyl-hexahydropyrimidine and 2-methyl-2-nitro-1,3-dimorpholinopropane in about a 1:1 ratio by weight. The composition is useful as a therapeutic agent when applied topically to the infected tissues of an animal at a concentration of 1–2% in a lotion, cream or ointment.

3,836,655
PRESERVATIVE COMPOSITION FOR MOIST GRAIN
Daniel L. Kensler, Jr., West Des Moines, and David D. Walgenbach, Des Moines, Iowa, assignors to Chevron Research Company, San Francisco, Calif.
No Drawing. Continuation-in-part of abandoned application Ser. No. 92,303, Nov. 23, 1970. This application Oct. 5, 1972, Ser. No. 295,392
Int. Cl. A01n *9/12, 9/24*
U.S. Cl. 424—286 4 Claims

A composition of sodium methyl dithiocarbamate and propionic acid can be used for preserving moist grain during storage.

3,836,656
SUBSTITUTED PURINES AS HYPOLIPIDEMICS
Mario G. Buzzolini, Morristown, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Filed Feb. 7, 1972, Ser. No. 224,327
Int. Cl. A61k *27/00*
U.S. Cl. 424—253 8 Claims

The d-isomer of optically active 3-(6-amino-9H-purin-9-yl)-1,2; propanediol is prepared from d-9-[(2-substituted and 2,2 - disubstituted-1,3-dioxol-4-yl)methyl]adenines and both the product isomer and starting materials are usful as hypolidemic agents.

3,836,657
ANTIFUNGAL METHODS EMPLOYING CERTAIN CARBOSTYRILS
John C. Sharp, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Filed Mar. 20, 1972, Ser. No. 236,201
Int. Cl. A01n *9/22*
U.S. Cl. 424—258 16 Claims

Certain carbostyril compounds have been found to be active against fungi. When the compounds were applied to soil where seedling plants were growing or to the plants themselves, the plants were protected from pathogenic fungi that cause powdery mildew, e.g., *Erisyphe cichoracearum* and other fungal pathogens of plants. The compounds are prepared by known chemical processes. A new method for controlling fungi and new formulations are described.

3,836,658
TRI-SUBSTITUTED IMIDAZOLES IN THE TREATMENT OF GOUT
John J. Baldwin, Lansdale, and Frederick C. Novello, Berwyn, Pa., assignors to Merck & Co., Inc., Rahway, N.J.
No Drawing. Original application May 5, 1972, Ser. No. 250,505. Divided and this application July 30, 1973, Ser. No. 384,160
Int. Cl. A61k *27/00*
U.S. Cl. 424—267 8 Claims

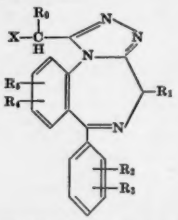
This relates to a new class of imidazoles which are substituted at the 2-carbon by an aryl or heterocyclic moiety and which are substituted at the 4 and 5 carbons by cyano, carboxy, alkoxycarbonyl, carbamoyl or N-substituted carbamoyl. These products have utility as anti-hyperuricemic agents in the treatment of gout.

3,836,659
GLUTARIMIDES FOR REDUCING THE NUMBER OF FETUSES IN MATED OR IMPREGNATED FEMALE MAMMALS
Bernard George Steinetz, Jr., Mountain Lakes, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed June 1, 1971, Ser. No. 149,025
Int. Cl. A61k *27/00*
U.S. Cl. 424—268 3 Claims

Pharmaceutical compositions comprising an effective amount of an α-(4-aminophenyl)-α-lower alkyl - glutarimide, a salt or N-lower alkanoyl derivative thereof and a pharmaceutical excipient, are agents for reducing the number of fetuses in mated or impregnated female mammals.

3,836,660
ANIMAL FEED AND PROCESS
Robert J. Collins, 7127 Winter Forest Drive, Portage, Mich. 49081
No Drawing. Filed Aug. 9, 1971, Ser. No. 170,273
The portion of the term of the patent subsequent to Sept. 17, 1991, has been disclaimed
Int. Cl. A61k *27/00*
U.S. Cl. 424—269 6 Claims

An animal feed for increasing meat, milk or egg production comprising a compound of the group consisting of a 1-substituted-6-phenyl-4H - s - triazolo[4,3-a][1,4] benzodiazepine of the formula:

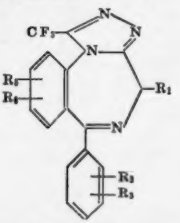


Formula 1

wherein R_0 is selected from the group consisting of hydrogen, methyl, ethyl, fluorine, chlorine, and bromine; wherein X is fluorine, bromine, or chlorine; wherein R_1 is selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, inclusive; and wherein R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen, alkyl as defined above, halogen, nitro, cyano, trifluoromethyl, and alkoxy, alkylthio. alkylsulfinyl, and alkylsulfonyl, in which the carbon chain moieties are of 1 to 3 carbon atoms, inclusive and a pharmaceutically acceptable acid addition salt thereof in combination with nutrient feeds.

3,836,661
ANIMAL FEED AND PROCESS
Robert J. Collins, 7127 Winter Forest Drive, Portage, Mich. 49081
No Drawing. Filed Aug. 9, 1971, Ser. No. 170,318
The portion of the term of the patent subsequent to Sept. 17, 1991, has been disclaimed
Int. Cl. A61k *27/00*
U.S. Cl. 424—269 6 Claims

An animal feed for increasing meat, milk or egg production comprising a compound of the group consisting of a compound of the formula:



Formula 1

wherein R_1 is selected from the group consisting of hydrogen and alkyl, of 1 to 3 carbon atoms, inclusive, and wherein R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen, alkyl as defined above, halogen, nitro, cyano, trifluoromethyl, and alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, dialkylamino, and alkanoylamino, in which the carbon chain moieties are of 1 to 3 carbon atoms, inclusive, and the pharmacologically acceptable acid addition salts in combination with the nutrient feed.

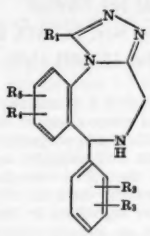
3,836,662

ANIMAL FEED AND PROCESS

Robert J. Collins, 7127 Winter Forest Drive, Portage, Mich. 49081

No Drawing. Filed Aug. 9, 1971, Ser. No. 170,342
The portion of the term of the patent subsequent to Sept. 17, 1991, has been disclaimed
Int. Cl. A61k *27/00*
U.S. Cl. 424—269 6 Claims

An animal feed for increasing meat milk or egg production comprising a compound of the group consisting of triazolobenzodiazepines of the formula:



Formula 1

wherein R_1 is selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive; wherein R_2, R_3, R_4 and R_5 are selected from the group consisting of hydrogen, alkyl defined as above, fluorine, chlorine, bromine, nitro, cyano, trifluoromethyl, alkoxy of 1 to 3 carbon atoms, inclusive, amino, alkanoylamino, in which the alkanoyl group is of 1 to 3 carbon atoms, inclusive, alkylthio in which the alkyl group is defined as above, alkylsulfinyl in which the alkyl group is defined as above, and dialkylamino in which the alkyl group is defined as above, and the pharmacologically acceptable acid addition salts and N-5 oxides in combination with the nutrient feed.

3,836,663

N-TRITYLIMIDAZOLES AS ANTIFUNGAL AGENTS

Erik K. Regel, Wuppertal-Kronenberg, Karl-Heinz Buchel, Leverkusen, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Application Oct. 8, 1971, Ser. No. 187,814, which is a division of application Ser. No. 873,098, Oct. 31, 1969. Divided and this application June 22, 1973, Ser. No. 372,813
Claims priority, application Germany, Nov. 5, 1968, P 18 06 995.6
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 15 Claims

Bis-imidazolyl-bisphenylmethane and pharmaceutically acceptable non-toxic salts thereof are useful as antimycotics especially against dermatomycosis caused by *Trichophyton* and *Microsporium* species and also against yeast infections of the skin and internal organs.

3,836,664

N-TRITYLIMIDAZOLES AS ANTIFUNGAL AGENTS

Erik K. Regel, Wuppertal-Kronenberg, Karl-Heinz Buchel, Leverkusen, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Application Oct. 8, 1971, Ser. No. 187,814, which is a division of appplication Ser. No. 873,098, Oct. 31, 1969. Divided and this application June 22, 1973, Ser. No. 372,807
Claims priority, application Germany, Nov. 5, 1968, P 18 06 995.9
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 17 Claims

Bis-imidazolyl-bisphenylmethane and pharmaceutically acceptable non-toxic salts thereof are useful as antimycotics especially against dermatomycosis caused by *Trichophyton* and *Microsporium* species and also against yeast infections of the skin and internal organs.

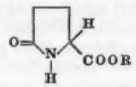
3,836,665

DERMATOLOGICAL COMPOSITIONS CONTAINING CERTAIN HIGHER ALKYL ESTERS OF 5-PYRROLIDONE-(2)-CARBOXYLIC ACID

Hans Eberhardt, Biberach an der Riss, and Hans Schaefer, Berlin, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

No Drawing. Filed Jan. 12, 1972, Ser. No. 217,290
Claims priority, application Germany, Jan. 18, 1971, P 21 02 172.7
Int. Cl. A61k *27/00*
U.S. Cl. 424—274 4 Claims

Topical dermatological compositions containing from 0.1 to 10% by weight of a higher alkyl ester of 5-pyrrolidone-(2)-carboxylic acid of the formula



wherein R is straight or branched alkyl of 8–30 carbon atoms.

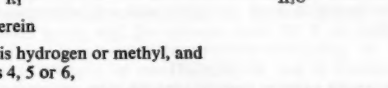
3,836,666

PHARMACEUTICAL COMPOSITIONS CONTAINING CERTAIN 1 - (CYANO-PHENOXY)-2-HYDROXY - 3 - (CYCLOALKYL-AMINO)-PROPANES AND METHOD OF USE

Herbert Köppe, Werner Kummer, Helmut Stähle, and Karl Zeile, Ingelheim am Rhein, Albrecht Engelhardt, Mainz, and Werner Traunecker, Munster-Sarmsheim, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

No Drawing. Original application July 22, 1970, Ser. No. 57,353, now Patent No. 3,755,413. Divided and this application Apr. 30, 1973, Ser. No. 355,708
Claims priority, application Germany, July 23, 1969, P 19 37 477.7
Int. Cl. A61k *27/00*
U.S. Cl. 424—304 12 Claims

β-Adrenolytic pharmaceutical compositions containing as an active ingredient a compound of the formula



wherein

R_1 is hydrogen or methyl, and
n is 4, 5 or 6,

or a non-toxic, pharmacologically acceptable acid addition salt thereof; and methods of using the same.

3,836,667

METHOD OF PRODUCING BRONCHODILATION

Henry Oswald Jackson Collier, London, and Brian Thomas Warren, Ickenham, England, assignors to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Mar. 19, 1973, Ser. No. 342,741
Claims priority, application Great Britain, Mar. 24, 1972, 14,067/72
Int. Cl. A61k *27/00*
U.S. Cl. 424—318 3 Claims

The invention relates to the use of prostaglandin A_1 as a bronchodilating agent; the prostaglandin can be used in particular in alleviating the symptoms of *status asthmaticus* by injection.

3,836,668

THERAPEUTIC COMPOSITION AND METHOD OF TREATING PATIENTS THEREWITH

Jorge Ferrer Batlles, Carlos Ferrer Salat, and Juan Colome Riera, Barcelona, Spain, assignors to Laboratories Ferrer S.L., Barcelona, Spain

No Drawing. Continuation-in-part of applications Ser. No. 318,110, Oct. 22, 1963, and Ser. No. 433,470, Feb. 17, 1965, both now abandoned. Said Ser. No. 433,470 being a continuation-in-part of application Ser. No. 78,778, Dec. 27, 1960. Said Ser. No. 318,110 being a division of said application Ser. No. 78,778, now Patent No. 3,714,486. This application Oct. 14, 1965, Ser. No. 496,127

Int. Cl. A61k *27/00*

U.S. Cl. 424—319 **12 Claims**

The neurological treatment of patients using Mg alpha-amino glutarate HBr.

3,836,669

METHOD OF KILLING BACTERIA USING DIDECYL DIMETHYL AMMONIUM CHLORIDE

Zaven A. Dadekian, Suffern, N.Y., assignor to Baird Chemical Industries, Inc., New York, N.Y.

No Drawing. Continuation of application Ser. No. 703,598, Feb. 7, 1968, which is a continuation-in-part of application Ser. No. 617,805, Feb. 23, 1967, both now abandoned. This application Aug. 25, 1971, Ser. No. 174,933

Int. Cl. A01n *9/20*

U.S. Cl. 424—329 **3 Claims**

A method of killing bacteria in the presence of hard water and blood serum by contact with didecyl dimethyl ammonium chloride.

3,836,670

BENZOBICYCLOALKANE AMINES FOR INDUCING ANALGESIA

Meier E. Freed, Paoli, and John R. Potoski, Spring City, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 200,517, Nov. 19, 1971, which is a continuation-in-part of application Ser. No. 94,983, Dec. 3, 1970, both now abandoned. This application June 14, 1972, Ser. No. 262,849

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 **8 Claims**

Benzobicycloalkane amines, their pharmacologically acceptable addition salts, intermediates therefore and processes for their preparation and use. The compounds of the invention exert analgesic and anti-inflammatory activity.

3,836,671

ALKANOLAMINE DERIVATIVES FOR PRODUCING β-ADRENERGIC BLOCKADE

Arthur Michael Barrett, Leeds, and John Carter, Roy Hull, David James Le Count, and Christopher John Squire, Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation-in-part of application Ser. No. 9,451, Feb. 6, 1970, now Patent No. 3,663,607, which is a continuation-in-part of abandoned application Ser. No. 199,011, Nov. 15, 1971. This application Mar. 10, 1972, Ser. No. 233,781

Claims priority, application Great Britain, Nov. 19, 1970, 55,028/70; Nov. 18, 1971, 53,544/71; Sept. 24, 1969, 47,048/69; Feb. 21, 1969, 9,445/69

Int. Cl. A61k *27/00*

U.S. Cl. 424—324 **5 Claims**

1-(electronegatively - substituted - alkyl- or alkenyl-phenoxy)-3-alkylamino-2-propanol derivatives, for example 1-*p*-carbamoylmethylphenoxy-3-isopropylamino-2-propanol and pharmaceutical compositions containing them possess β-adrenergic blocking activity and are useful in the treatment of heart diseases and other complaints in man.

3,836,672

TOPICAL ANTIFUNGAL 1,3-DIOLS

Donald L. Wright, 35 E. 75th St., New York, N.Y. 10021, and John W. Frankenfeld, 2 Ballinswood Road, Atlantic Highlands, N.J. 07716

No Drawing. Filed Nov. 11, 1971, Ser. No. 197,931

Int. Cl. A01l *13/00*

U.S. Cl. 424—343 **4 Claims**

The present invention is based on the discovery that certain 1,3-diols and mono-esters of certain 1,3-diols are effective in controlling microorganisms associated with infections in humans and animals. Anti-microbial preparations having as the active ingredient these specified diols, monoesters of the diols or mixtures thereof are provided. The active ingredient in these preparations is generally present in an amount ranging from about 0.5 to about 10 weight percent based on the total weight of the preparation.

3,836,673

SINTERED SILICON CARBIDE

Gerald Q. Weaver, Worcester, and Bradford A. Olson, Leicester, Mass., assignors to Norton Company, Worcester, Mass.

No Drawing. Filed Mar. 23, 1972, Ser. No. 237,545

Int. Cl. C01b *31/36*

U.S. Cl. 423—345 **1 Claim**

A dense silicon carbide product is described. The product has a flexural strength above 100,000 p.s.i. at room temperature, above 80,000 p.s.i. at 1200° C., above 60,000 p.s.i. at 1375° C. and above 45,000 p.s.i. at 1500° C. The product has a grain size of less than 5 microns and essentially all of the silicon carbide is in the alpha form. The product has a density in excess of 99% of theoretical density and contains about .5% to 5% aluminum. A preferred process for preparing the product is also described.

3,836,674

COMPOSITION AND METHOD FOR STABILIZING TRANS-DIETHYLSTILBESTROL

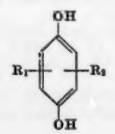
Richard W. Griscom and James J. Brader, Jr., Morristown, Tenn., assignors to Chemetron Corporation, Chicago, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 119,929, Mar. 1, 1971. This application June 25, 1973, Ser. No. 372,999

Int. Cl. A61k *17/06, 27/00*

U.S. Cl. 424—346 **15 Claims**

In an environment in which isomerism occurs, diethylstilbestrol is stabilized in the active trans form by the presence of a stabilizing quantity of a compound of the formula:



wherein R_1 is hydrogen or a tertiary loweralkyl group and R_2 is a tertiary loweralkyl group.

3,836,675

PURIFICATION OF YELLOW PHOSPHORUS

Gerhard Hartlapp, Hurth-Hermulheim, Hans Haas, Hurth-Knapsack, and Karl-Heinz Stendenbach, Bruhl, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, Germany

Filed July 17, 1972, Ser. No. 272,436

Claims priority, application Germany, July 16, 1971, P 21 35 546.4

Int. Cl. C01b *25/02, 25/04*

U.S. Cl. 423—322 7 Claims

Purification of yellow phosphorus. Phosphorus is mixed in a mixing zone with between 0.5 and 5 weight percent of an aqueous suspension of active carbon containing between 50 and 500 kg./cubic meter of active carbon, the percentages being based on phosphorus, the active carbon and the phosphorus are allowed to remain in contact with one another for a period of time between 0.5 and 15 minutes, and the phosphorus is filtered in a filtration zone so as to separate the active carbon therefrom.

3,836,676

FEEDSTUFF FOR FOWL, FISH AND DOMESTIC ANIMALS

Chukei Komakine, 6–1, 3-chome, Taira Aza, Iwaki, Japan

No Drawing. Original application June 29, 1971, Ser. No. 158,077, now Patent No. 3,776,188. Divided and this application Jan. 4, 1973, Ser. No. 320,956

Int. Cl. A23k *1/175*

U.S. Cl. 426—74 4 Claims

An odorless composition useful as a feedstuff for fowl, fish and domestic animals consisting essentially of a dried mixture of droppings from fowl, coarse powder crystalline ferrous sulfate heptahydrate, and a finely powdered adsorbent selected from the group consisting of fly ash and zeolite, and containing about 7% by weight of said ferrous sulfate heptahydrate and about 3.5% by weight of said adsorbent, said percentage by weight being based on the weight of the droppings.

3,836,677

PROCESS FOR MAKING SIMULATED MEAT AND CHEESE PRODUCTS

James A. Freck, Naperville, and Leonard V. Kondrot, Chicago, Ill., assignors to American Maize-Products Company

No Drawing. Filed May 19, 1972, Ser. No. 255,054

Int. Cl. A23l *1/00, 1/10*

U.S. Cl. 426—103 6 Claims

An improved process for preparing simulated meat and cheese products is disclosed. The improvement comprises the inclusion in the product of a high amylose material whereby substantial processing costs are saved.

3,836,678

SAUSAGE ANALOG

Harold T. Leidy, New City, N.Y., Charles M. Kerrigan, Wayne, N.J., and Duane C. Byble, Ossining, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 35,267, May 6, 1970. This application Dec. 4, 1972, Ser. No. 312,174

Int. Cl. A23j *3/00*

U.S. Cl. 426—350 2 Claims

A sausage-like food product is prepared by autoclaving a gel precursor which is a mixture of non-fibrous gelable soy protein isolate and a material selected from albumen, casein, whey and mixtures thereof.

3,836,679

PACKAGE AND METHOD OF MAKING SAME

Oscar E. Seiferth, Robert L. Goller, and Paul E. Grindrod, Madison, and Harry L. Radloff, Sun Prairie, Wis., assignors to Oscar Mayer & Co., Inc., Madison, Wis.

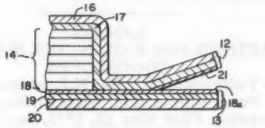
Continuation-in-part of application Ser. No. 754,361, Aug. 21, 1968, now Patent No. 3,647,485. This application Feb. 7, 1972, Ser. No. 223,986

The portion of the term of the patent subsequent to Mar. 7, 1989, has been disclaimed

Int. Cl. B65b *25/06*

U.S. Cl. 426—126 20 Claims

A hermetically sealed package and method of making the same which includes a breakaway or peelable seal formed between the respective seal forming surfaces of first and second sheets of packaging material. The first sheet of packaging material includes a seal forming surface which consists essentially of a saran film or coating having a suitable oxygen barrier film, for example, a saran film of 85% vinylidene chloride and 15% vinyl chloride, adhered to the surface of the saran film or coating which is opposite its seal forming surface. The second sheet of packaging material has a seal forming surface which consists essentially of an ethylene-polar monomer copolymer film or coating, for example, an ethylene-vinyl acetate film or coating, having a metallic foil, for example aluminum foil, adhered to the surface of the ethylene-polar monomer film or coating which is opposite its seal forming surface. The foil lamina is, in turn, adhered to a suitable backing member, for example a sheet of paperboard or similar material. Preferably, during seal formation, the seal interface is heated to a temperature below the melt temperatures of the film materials which make up the seal, for example from 80° F. to 200° F., to provide improved sealing without destroying the breakaway property or peelability of the seal so formed.



3,836,680

PROTEIN-FREE ALIMENTARY PASTES AND A PROCESS FOR THEIR PRODUCTION

Silvio Salza, 46 Via Sottoborgo, 56100 Pisa, Italy

No Drawing. Filed July 11, 1972, Ser. No. 270,737

Claims priority, application Italy, July 21, 1971, 69,449/71; Nov. 30, 1971, 70,938/71

Int. Cl. A23l *1/16*

U.S. Cl. 426—158 9 Claims

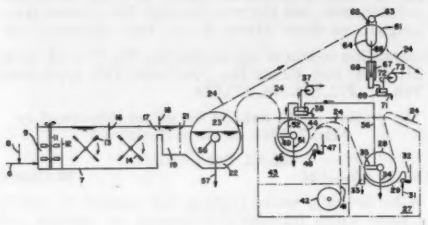
Producing protein-free starch base alimentary pastes by forming the desired shapes of alimentary pastes from a mixture of ungelatinized starch and gelatinized starch, the latter acting as a binder for the former.

3,836,681

DEVICE AND METHOD OF RECOVERING STICKY PARTICULATE MATERIALS SUCH AS ALGAE

Joseph C. Dodd, 945 Craig Place, Davis, Calif. 95616

Filed Mar. 1, 1972, Ser. No. 230,697
Int. Cl. B01d *33/04, 37/02*
U.S. Cl. 426—272 9 Claims



Sticky particles (algae) are recovered from environmental liquid by being passed through a precoat on a screen, the particles being entrapped in the precoat. Dewatering and drying follow and the precoat with the entrapped particles is removed from the screen for subsequent use. The device for carrying out the method includes a screen moving in a set path. A coating unit supplies a precoat to the advancing screen. A depositing unit supplies particles in their environmental liquid to the precoat. Dewaterers and driers remove much of the liquid. The remaining, particle-precoat combination is removed from the screen preferably by a sonic whistle, and is discharged from the machine. A washer cleans the screen for reuse when necessary.

3,836,682

METHOD FOR ENHANCING SOLUBLE FOODSTUFFS

Slawko Yadlowsky, Manville, N.J., assignor to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed May 12, 1972, Ser. No. 252,779
Int. Cl. A23f *1/04*
U.S. Cl. 426—312 9 Claims

A process for producing an enhanced soluble foodstuff which will exhibit a pleasant aroma when dissolved in water has been developed. Aromas such as coffee aroma are fixed in a liquid glyceride-carbohydrate solids medium which is then solidified, subdivided, blended with a liquid extract and dried. The fixed aroma may be frozen in order to facilitate subdivision. According to a preferred embodiment of this invention coffee aroma is added to a vegetable oil having suspended therein particles of soluble coffee.

3,836,683

METHOD OF PREPARING SHELF-STABLE PÂTÉS

Joseph W. Hoos, Waldwick, and Bohdan O. Hreschak, Hawthorne, N.J., assignors to Nabisco, Inc., New York, N.Y.

No Drawing. Filed May 10, 1971, Ser. No. 141,927
Int. Cl. A23c *23/00;* A23l *1/00*
U.S. Cl. 426—357 8 Claims

Method of making a shelf stable simulated meat pâté, spread or dip from dairy products by preparing a dry blend of dehydrated cultured milk product, with or without dehydrated soft cheese, and edible thickener and/or other ingredients, mixing edible vegetable oil and edible emulsifier and/or other ingredients with the dry blend, adding water and pasteurizing at a temperature of about 170° F. to about 185° F. by steam injection and adding edible antimycotic agent and edible flavoring agent at a temperature of about 170° F. to about 175° F. in the pasteurization.

3,836,684

METHOD AND APPARATUS FOR PREPARATION OF RICOTTA CHEESE

Nicholas E. Pontecorvo, 18075 Ventura Blvd., Encino, Calif. 91316

Continuation-in-part of applications Ser. No. 39,721, May 22, 1970, now Patent No. 3,741,773, Ser. No. 121,709, Mar. 8, 1971, now Patent No. 3,732,110, and Ser. No. 193,469, Oct. 28, 1971, now abandoned. This application May 21, 1973, Ser. No. 362,279
The portion of the term of the patent subsequent to May 8, 1990, has been disclaimed
Int. Cl. A23c *19/02*
U.S. Cl. 426—361 16 Claims

Ricotta cheese is prepared using a method and apparatus wherein a heated body of whey or milk or both is treated in a processing vat by injection of acid to develop curd which is allowed to separate and rise to the surface of the body of liquor from which it has been separated. The body of liquor is then drained off, lowering the floating curd to a level where it approaches the open upper ends of a plurality of strainer-canisters assembled within a pan sealed to and communicating with a bottom opening in the vat so as to provide a closed bottom therefor. The pan is detachable from the vat and is embodied in a mobile cart in which the strainer-canisters can be transported to an unloading zone where they are removed for discharge of individual bodies of curd collected therein. At least the final stage of draining of the liquor is performed by draining through the perforations of the strainer-canisters and out of the pan so as to direct all of the curd into the canisters.

3,836,685

PROCESS FOR INHIBITING FAT-CAPS IN MEAT-IN-GRAVY PRODUCTS

Robert E. Schara, Myron D. Shoaf, and Charles P. Berry, Battle Creek, Mich., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Sept. 15, 1972, Ser. No. 289,706
Int. Cl. A23l *1/31, 3/10*
U.S. Cl. 426—371 2 Claims

A filler material is incorporated within the meat portion of a packaged meat-in-gravy product which is retorted so as to prevent the formation of fat-caps within the packaged and retorted meat-in-gravy product.

3,836,686

RECOVERY OF PROTEIN HYDROLYSATE FROM FISH OR FISH PRODUCTS

Oswald A. Roels, Demarest, N.J. 07627

No Drawing. Continuation of abandoned application Ser. No. 126,358, Mar. 19, 1971. This application Oct. 27, 1972, Ser. No. 301,371
Int. Cl. A23j *1/04*
U.S. Cl. 426—376 2 Claims

A process for recovering a protein hydrolysate from whole fish or fish products, such as, for example, fish meal comprising digesting a homogenized slurry of the fish at elevated temperature in an acid medium at a pH of about 1 and separating and purifying the aqueous phase of the digestion step; the protein hydrolysate resulting from the aforedescribed procedure being extremely low in fish oil content and consequently more palatable and resistant to spoilage.

3,836,687

ROLL-FORMING PROCESS

Gay M. Bonebrake, Chicago, Ill., assignor to TAB Engineers, Inc., Northbrook, Ill.

Filed Dec. 13, 1971, Ser. No. 207,318
Int. Cl. A21d *8/02*
U.S. Cl. 426—496 3 Claims

Balls of dough are carried in inverted cup-shaped pockets and on a conveyor belt assembly, part of the belt assembly moving continuously longitudinally and intermittently reciprocated laterally to shape the balls into

rolls. Portions of the belt assembly are moved at speeds differing from that of the pockets. The formed rolls are delivered to peel boards moved in timed relationship with the belt assembly.

3,836,688

DEVICE FOR USE IN THE PRODUCTION OF CHEESE

Wilhelm Fischer, Durach, Friedrich Krause, Durach-Heberlings, Walter Riesner, Durach, and Hubert Sonnenmoser, Kempten, Germany, assignors to Lever Brothers Company, New York, N.Y.

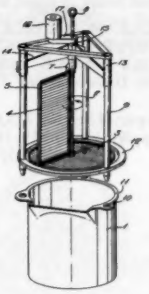
Filed Mar. 19, 1973, Ser. No. 342,911

Claims priority, application Germany, Mar. 21, 1972, P 22 13 545.1

Int. Cl. A23c *19/02*

U.S. Cl. 426—518 **5 Claims**

A device for cutting cheese curd during its coagulation which comprises a vertical frame of parallel wires and a horizontal frame of parallel wires. These are carried on a rotary shaft which enables three cuts at right angles to one another to be made in the curd to form



cubes. The particular arrangement avoids double cutting which would result in undesirable curd dust.

ELECTRICAL

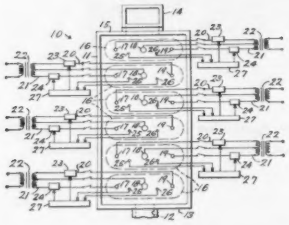
3,836,689
ELECTRIC GLASS FURNACE WITH ZONE TEMPERATURE CONTROL

Robert W. Holler, and Richard E. Rothrock, both of Toledo, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 273,063, July 19, 1972, abandoned. This application Apr. 19, 1973, Ser. No. 352,833

Int. Cl. C03b *5/02*

U.S. Cl. 13—6 **15 Claims**



An improved furnace for electrically heating material such as molten glass. At least one and, preferably, a plurality of controlled thermal zones are established transverse to the direction of glass flow through the furnace. For each thermal zone, at least two electrical circuits supply power to at least three submerged electrodes for heating the glass. A control circuit is provided to maintain substantially constant the square of the average current in each circuit. If a predetermined permissible temperature variation is exceeded in the molten glass in any thermal zone, power to all electrodes for such thermal zone is either reduced or interrupted. The thermal zones may also be interdependent for maintaining a desired temperature profile in the material flow direction.

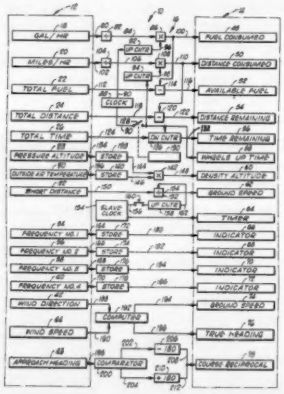
3,836,690
NAVIGATION DATA COMPUTATION APPARATUS

Homer Purtle, Jr., 731A Fernander Ave., Wheeler AFB, Hawaii 96515

Filed Dec. 6, 1972, Ser. No. 312,612

Int. Cl. G01c *21/00*; **G09b** *19/16*

U.S. Cl. 35—10.2 **12 Claims**



An improved navigation data computation apparatus having manually settable data entry devices receiving pilot entered data, a data computation assembly receiving the pilot entered data and providing output signals indicative of predetermined navigation data, and decimal display devices receiving the output signals and providing pilot perceivable output indications indicative of the predetermined navigation data.

3,836,691
FILM ADVANCING SYSTEM FOR PHOTOGRAPHIC CAMERAS

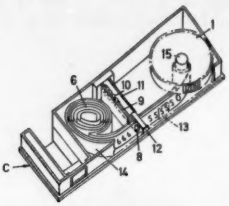
Maynard Frank Wolfe, 18 B Venice Ct., 41 Conduit Rd., Sai Ying Pun, Hong Kong

Filed June 15, 1972, Ser. No. 262,997

Claims priority, application Great Britain, June 17, 1971, 28486/71

Int. Cl. G03b *19/04*

U.S. Cl. 354—213 **1 Claim**



A film advancing system for a camera in which the number of film frames exposed is indicated by a marked tape that is wound in unison with the film upon a compartmented take-up spool. As each frame length of film is presented at the exposure zone, the spool is locked by the action of a releasable spring-loaded plunger that inserts through an opening in the tape.

3,836,692
SIGNAL-SELECTING SYSTEM FOR A KEYBOARD TYPE ELECTRONIC MUSICAL INSTRUMENT

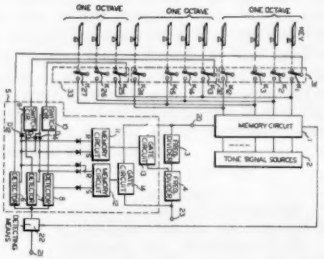
Takatsugu Nakajima, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 24, 1972, Ser. No. 300,256

Claims priority, application Japan, Oct. 25, 1971, 46-84821

Int. Cl. G10k *1/00*

U.S. Cl. 84—1.01 **5 Claims**



A signal-selecting system for a keyboard type electronic musical instrument comprising keyswitches, memory means,

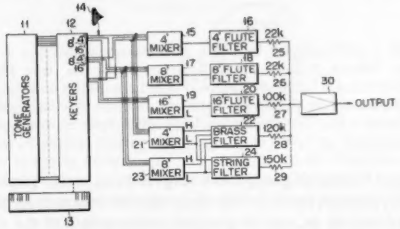
tone signal sources, signal-switching means, frequency dividers, key-selecting means, octave-selecting means, detecting means and a power source. By employing memory means and tone signal sources corresponding to the notes of one octave, a signal selecting operation for several octaves can be carried out by detecting the extreme keyswitch group and detecting the extreme keyswitch in each of the keyswitch groups even when a plurality of keyswitches corresponding to several octaves are closed simultaneously. The tone signals which do not correspond to the provided tone signal sources are provided by dividing the frequency of the corresponding original octave by a factor of two in each divider.

3,836,693

PIANO TONE-SYNTHESIZING SYSTEM FOR ELECTRONIC MUSICAL INSTRUMENTS

Kiyoshi Ichikawa, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed June 28, 1973, Ser. No. 374,309
Claims priority, application Japan, June 30, 1972, 47-65488
Int. Cl. G10h *5/02*
U.S. Cl. 84—1.19 **18 Claims**



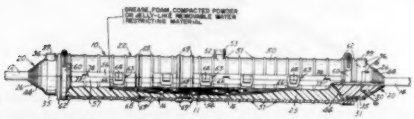
A piano tone-synthesizing system for an electronic musical instrument comprising tone generators and a keyboard provided with a plurality of keys. Operation of each key on the keyboard causes tone signals of 4', 8' and 16' to be derived from the tone generators by a keyer. The tone signals of 4', 8' and 16' are supplied with the color of flute tones by flute tone coloring filters. The tone signals of 4' and 8' are further furnished with the colors of brass and string tones by a brass tone coloring filter and a string tone coloring filter. The tone signals bearing the various tone colors are mixed to provide a piano tone.

3,836,694

RE-ENTERABLE SPLICE ENCLOSURE

Henry K. Kapell, P.O. Box 33427, Mahtomedi, Wash. 55133

Continuation-in-part of Ser. No. 274,479, July 24, 1972, abandoned. This application July 5, 1973, Ser. No. 376,285
Int. Cl. H02g *15/20*
U.S. Cl. 174—22 **12 Claims**



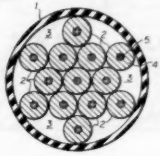
A re-enterable splice enclosure including anchor members in permanent secure engagement adjacent the terminal ends of spliced cables, a separable two part housing releasably attached between the anchor members and forming a cavity about the splice and a layer of a water restricting material about the splice within the cavity.

3,836,695

CABLE SEALANT COMPOSITION AND METHOD OF SEALING CABLE

Larry A. Strecker, and James E. Wood, both of St. Louis, Mo., assignors to Inmont Corporation, New York, N.Y.

Division of Ser. No. 227,956, Feb. 22, 1972,. This application Sept. 4, 1973, Ser. No. 393,761
Int. Cl. H01b *3/30, 7/02*
U.S. Cl. 174—23 C **4 Claims**



A cable sealant to seal the voids between the strands of electrical and similar cables to prevent water flow through same and to seal the cable elements from the atmosphere. The preferred cable sealant composition comprises about 10 percent by weight ethylene propylene rubber copolymer, about 40 percent discrete particles of butadiene-acrylonitrile rubber copolymer, about 15 percent polypropylene, about 11 percent polyethylene, about 10 percent paraffin wax and about 13 percent liquid parafinnic hydrocarbons. About 1 percent of colorant such as iron oxide is normally added to this composition, which is blended to form the cable sealant.

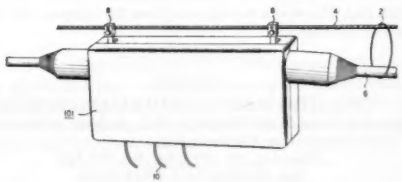
A method of sealing cable by filling the voids between cable strands with the above composition at a temperature preferably in the range between 225° and 275°F.

3,836,696

CABLE TERMINAL

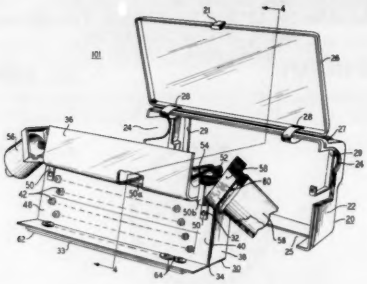
Tillman Johnson Gressitt, Long Valley; Peter Paul Koliss, Mendham, both of N.J., and Raymond Bolton Ramsey, Dunwoody, Ga., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 23, 1973, Ser. No. 418,197
Int. Cl. H02g *15/10, 7/06;* **H01r** *9/00*
U.S. Cl. 174—41 **9 Claims**



A cable terminal unit includes a housing having a door or cover hinged thereto by an integral hinge. A one-piece terminal panel mounts within the housing and divides it into a plurality of chambers including a cable splicing chamber which is covered by the panel and inaccessible when the panel is installed even when the door is open. Conductors of a stub cable are spliced to selected ones of the cable conductors within this chamber and are fastened to terminals which have one end extending from the panel into an accessible chamber. Thereafter service wires can be connected to the terminals

without requiring access to the splicing chamber. Cable shield continuity across the terminal is provided by a flexible bonding system which allows substantial pullback of the cable sheath and shield within the terminal unit.

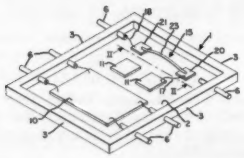


3,836,697

HIGH CURRENT INTERCONNECTION ASSEMBLY IN A MICROCIRCUIT PACKAGE

Warren J. Schultz, Barneveld, N.Y., assignor to General Electric Company, Utica, N.Y.

Filed Apr. 21, 1971, Ser. No. 135,841
Int. Cl. H05k *3/30*
U.S. Cl. 174—68.5 **1 Claim**



A high current interconnection is provided in a microcircuit package comprising first and second contacts each bonded to a substrate mounted in a package interconnected by a high current wire. The contacts are discrete pads of beryllium oxide and the high current wire is formed of Nichrome which is welded at its ends to a conductive surface layer provided on each pad. The wire is bowed away from the substrate for thermal stress relief.

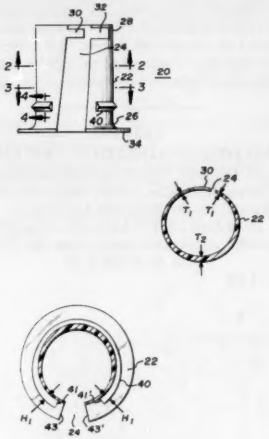
3,836,698

INSULATING SLEEVE FOR METALLIC CONDUIT

Jaspal S. Bawa, South Plainfield, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Aug. 27, 1973, Ser. No. 391,749
Int. Cl. H02g *3/04*; **H01b** *17/58*
U.S. Cl. 174—83 **9 Claims**

An insulating sleeve for metallic conduit comprises a selectively slit tubular body member having a circumferentially disposed rib of preferably triangular cross section disposed adjacent a flared end of the body member and proportioned to have a height adjacent the slit portion of the body member somewhat greater than that along the remainder thereof to provide a generally uniform height about the periphery of the body member as the portion of the body member adjacent the slit is overlapped for insertion into the open end of a metallic conduit or the like. The body member is also selectively proportioned to have a thickness adjacent the slit portion thereof somewhat thinner than its thickness diametrically opposite thereto so that the body member may more closely approximate a circular configuration as it is selectively closed upon itself. The body member may be slit in such manner as to provide an interlocking tang and a tang receiving notch, respectively, adjacent the end of the body member remote from the flared end to prevent longitudinal displacement of the slit edges of the sleeve in use.

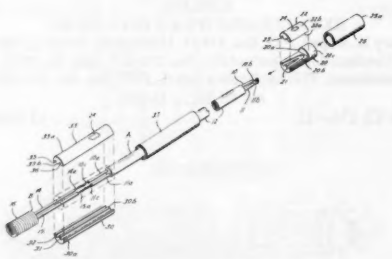


3,836,699

INSULATED ELECTRICAL CONNECTION

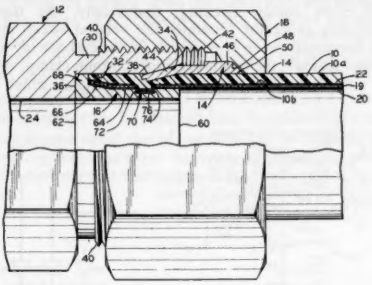
Kenneth G. Downing, San Marcos, Tex., assignor to Thermon Manufacturing Company, San Marcas, Tex.

Continuation of Ser. No. 226,769, Feb. 16, 1972, abandoned.
This application Sept. 10, 1973, Ser. No. 395,531
Int. Cl. H02g *15/08*
U.S. Cl. 174—87 **4 Claims**



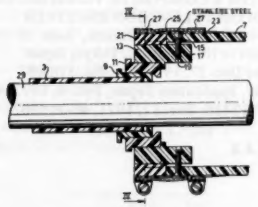
An electrical connector for connecting electrical conductors, which have been joined by soldering splicing or other means, including first and second insulation members having grooves therein for receiving the joined conductors between said members; and, a sleeve slidably mounted about said insulation members, the sleeve being crimped to secure the insulation members about the joined conductors.

3,836,700
CONDUIT COUPLING
Robert W. Niemeyer, Avon Lake, Ohio, assignor to Alco Standard Corporation, Valley Forge, Pa.
Filed Dec. 6, 1973, Ser. No. 422,309
Int. Cl. H02g 15/08
U.S. Cl. 174—89 8 Claims



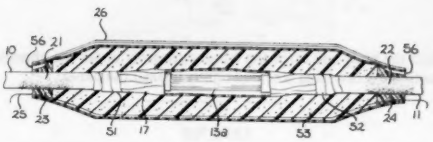
A coupling connection is disclosed for providing a fluid tight seal, electrical continuity and restraint against axial separation between a metal coupling body and tubular plastic telephone wire conduit, the inner surface of which conduit is lined with an electrically conductive metal foil and a covering film of plastic. During assembly of the coupling connection, the coupling components cooperate to axially displace and radially deform the plastic conduit to establish areas of sealing engagement therebetween. The radial deformation provides an interengaging relationship between the conduit and coupling components to restrain axial separation of the conduit from the coupling body, and cause penetration of the plastic film covering the conductive foil by one of the coupling components to establish electrical contact therebetween.

3,836,701
APPARATUS FOR SPLICING CABLES
Owen Winram Worden, 2809 Uplands Crescent, Abbotsford, British Columbia, Canada
Filed Oct. 18, 1972, Ser. No. 298,484
Claims priority, application Canada, Apr. 11, 1972, 139387
Int. Cl. H02g 15/08
U.S. Cl. 174—93 7 Claims



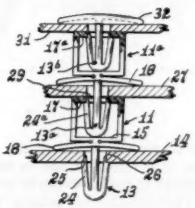
A cable splice method and housing includes a central section with an internal diameter larger than the diameter of the cable to be spliced whereby the housing is movable lengthwise to permit access to a splicing zone. A pair of end plugs are arranged to accommodate the outer covering carrying the cable in fluid-tight engagements, each end having an outside diameter such as to accept an end part of the central section and a sealing ring fitted to each end plug and encircling the plug in close proximity to the adjacent end of the central section. Anchoring means secure the central section to the end plug and clamp means are arranged to encircle both the sealing ring and the adjacent end of the central section to complete a fluid-tight seal between the end plug and said central section.

3,836,702
MEANS FOR SEALING AND PROTECTING A CABLE SPLICE
Walter A. Plummer, 3546 Crowridge Dr., Sherman Oaks, Calif. 91403
Filed Apr. 3, 1973, Ser. No. 347,435
Int. Cl. H02g 15/08
U.S. Cl. 174—92 11 Claims



A cable splice assembly is disclosed for connecting a first and a second cable, each of which include a plurality of conductors. An inner cover placed about the conductors is surrounded by an outer jacket having a valve and which is sealed at the first and second cable. An expandable liquid foam is injected through the valve into the volume defined by the jacket. The foam, after expanding and hardening, forms a relatively solid insulating mass about the conductors.

3,836,703
CIRCUIT BOARD SPACER-SUPPORT
Ronald A. Coules, Chicago, Ill., assignor to Richco Plastic Company, Chicago, Ill.
Filed Oct. 19, 1973, Ser. No. 408,073
Int. Cl. H05k 7/12; F16b 5/06, 19/00
U.S. Cl. 174—138 D 6 Claims

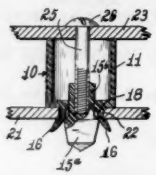


A one-piece spacer-support for a circuit board fabricated from plastic dielectric material and having resiliently flexible means for securing it to a chassis and an apertured top wall upon which a circuit board is seated and secured thereto as by means of another spacer-support or the like.

3,836,704
INSULATOR GROMMET OR SPACER
Ronald A. Coules, Chicago, Ill., assignor to Richco Plastic Company, Chicago, Ill.
Filed Oct. 19, 1973, Ser. No. 408,074
Int. Cl. H05k 7/12; F16b 5/00, 29/00
U.S. Cl. 174—138 D 10 Claims

A chassis-panel assembly including an insulator grommet or spacer for securing the panel spaced apart over the chassis, and wherein said grommet includes a spacer body, a spreader block and securing wings. To assemble, the spreader block and wings are projected through an aperture in the chassis and

a headed screw is extended through an aperture in the panel and engaged in the spreader block to draw the spreader block



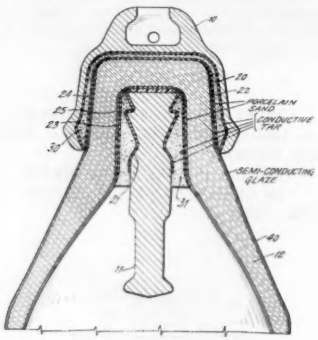
into the body and force the wings outwardly under the chassis until the screw head is seated tightly against the panel.

3,836,705

ELECTRICAL INSULATOR AND CONDUCTING TAR THEREFOR

Gordon Rosenblatt, Burlington, Ontario, Canada, assignor to Canadian Porcelain Company Limited, Ontario, Canada

Filed Dec. 14, 1972, Ser. No. 315,119
Int. Cl. H01b *17/42, 17/50*
U.S. Cl. 174—140 C **11 Claims**



A conducting tar coating is placed on the surfaces of the conductive hardware of an insulator, and on the surfaces of an insulator shell connected to the hardware by a cement. The insulator surface has a semiconducting coating. The conducting tar is formed by admixing carbon black in an asphalt base after dissolving the asphalt with a suitable solvent.

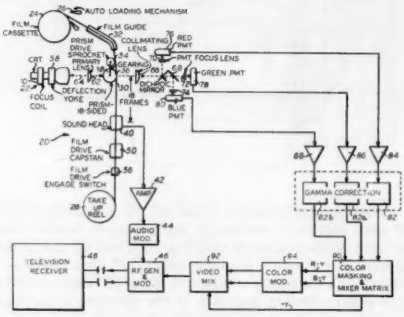
3,836,706

FLYING SPOT SCANNING SYSTEM

Patrick J. Keegan, Van Nuyes, and Carl J. Roberts, Northridge, both of Calif., assignors to Cassette Sciences Corp., New York, N.Y.

Filed June 18, 1973, Ser. No. 370,718
Int. Cl. H04n *5/36*
U.S. Cl. 178—5.2 D **21 Claims**

A flying spot scanning system includes a flying spot scanner arrangement utilizing a multi-facetted prism, such as an 18-sided prism, for scanning a movie film and producing color video signals therefrom for display on a conventional color television receiver. Red, blue, and green photomultiplier tubes in conjunction with a dichroic mirror arrangement provide the color signals which are gamma corrected, and phosphor corrected and processed to provide the composite color video signal. The film preferably contains a separate audio track which is separately processed and mixed with the color video signal to provide the composite video signal. The control for the flying spot scanner is provided by a digital synchronizing generator which utilizes the color burst frequency as the basic timing reference signal for generating all of the control signals for the television receiver, the scanner, and the synchronizing signals for ant external devices, such as a computer terminal and a computer, to lock these external devices to the scanning of the flying spot scanner, which digital signals are utilized to directly drive analog circuitry. Specifically, the digital synchronizing generator generates the vertical sweep drive and the horizontal sweep drive signals for the cathode ray tube flying spot scanner, the composite sync, chromo clamp, video clamp, color burst, and composite blanking signals which are



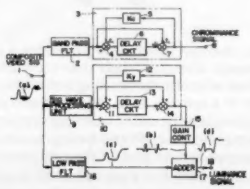
provided to the flying spot scanner and subsequently to the television receiver in the composite video signal, and the horizontal sync and vertical sync signals which are utilized for external control of video so as to lock the external device to the television sweep provided from the digital synchronizing generator. The audio portion of the signal is processed through an audio FM modulator utilizing a field effect transistor to modulate an LC oscillator, the field effect transistor being utilized as a phase variance circuit. The gamma correction circuitry utilized in the system is substantially temperature independent. The phosphor correction circuitry and chroma processing circuitry utilize multi function elements to increase efficiency.

3,836,707

VIDEO SIGNAL PROCESSING DEVICE FOR EXTRACTING THE CHROMINANCE AND LUMINANCE SIGNALS FROM A COMPOSITE VIDEO SIGNAL IN A COLOR TELEVISION RECEIVER

Toshio Murakami, and Akira Shibata, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 27, 1972, Ser. No. 318,987
Claims priority, application Japan, Feb. 4, 1972, 47-12221; Feb. 4, 1972, 47-12225; Dec. 27, 1971, 46-105307
Int. Cl. H04n *5/38*
U.S. Cl. 178—5.4 R **25 Claims**



A video signal processing device for a color television receiver includes a low-pass filter for obtaining lower frequen-

cy components out of a composite video signal consisting of a luminance signal and a carrier chrominance signal, a band-pass filter for obtaining higher frequency components of the composite video signal, and a signal wave processing unit for delivering the second order differential of the composite video signal. There is provided in the device a first comb-shaped filter and a second comb-shaped filter for obtaining carrier chrominance signal components and luminance signal components from the outputs of the band-pass filter and the signal wave processing unit, respectively, and an adder for adding the luminance signal components extracted from the output of the signal wave processing unit by means of the second comb-shaped filter to the output obtained from the low-pass filter, whereby a low noise luminance signal added with a preshoot and an overshoot can be obtained from the adder, and a carrier chrominance signal also of low noise can be obtained from the first comb-shaped filter. Alternate embodiments are also simplified by the fact that only a single comb-shaped filter is required.

3,836,708

COLOR TELEVISION SATURATION CONTROL

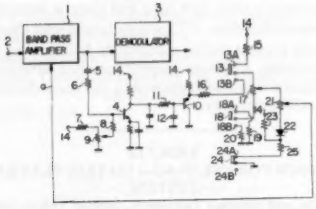
Nori Mesi, Takatsuki, and Hiroyuki Irie, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 28, 1973, Ser. No. 374,666

Claims priority, application Japan, June 30, 1972, 47-66143; June 30, 1972, 47-66144

Int. Cl. H04n *9/48*

U.S. Cl. 178—5.4 AC **4 Claims**



A color television receiver having a system for controlling the color saturation in which either of a divided dc voltage signal of a dc source or a mean-rectified dc signal of the output of a band pass amplifier in the color signal circuit can be selectively derived through a change-over switch and applied to said band pass amplifier through a common variable resistance to control the gain of said band pass amplifier and thereby control the color saturation.

3,836,709

PROCESS AND APPARATUS FOR PREPARING PRINTING PLATES USING A PHOTOCURED IMAGE

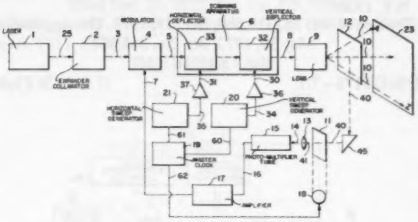
John Grear Hutchison, Catonsville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Apr. 12, 1972, Ser. No. 243,388

Int. Cl. G03f *1/02*; **H04n** *1/28*

U.S. Cl. 178—6.7 R **22 Claims**

A printing plate is prepared by subjecting a uniform coating of the photocurable composition on a support layer to a beam of laser radiation, varying in a controlled manner the point at which the laser beam impinges on the coating so that a predetermined pattern of cured photocurable composition is



formed, and thereafter removing the uncured portions of the photocurable composition.

3,836,710

PATTERN DISCRIMINATION SYSTEM USING TELEVISION

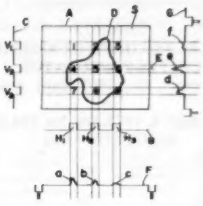
Masaaki Takahashi, Yokohama, Japan, assignor to n a c Incorporated, Tokyo, Japan

Filed Sept. 11, 1972, Ser. No. 287,733

Claims priority, application Japan, Dec. 9, 1971, 46-99008; Jan. 20, 1972, 47-7238; May 4, 1972, 47-43727

Int. Cl. H04n *7/18*

U.S. Cl. 178—6.8 **2 Claims**



A pattern discrimination system for automatic and rapid detection of occurrences of an abnormal condition in a pattern under surveillance comprising the means and steps of producing at least one horizontal gate pulse and vertical gate pulse of any required width and position by utilizing the television art, sampling a video signal with the horizontal and vertical gate pulses to form at least one sample surface variable in position, size or shape thereof in the field of view of a monitor, producing an integrated value of voltage of a video signal corresponding to the sample surface of the pattern under surveillance, digitally storing the integrated value of voltage of the video signal in a digital memory, and producing another integrated value of voltage of the video signal corresponding to said sample surface of the pattern under surveillance after a lapse of a predetermined time interval and comparing the second integrated value of voltage with the integrated value of voltage stored previously.

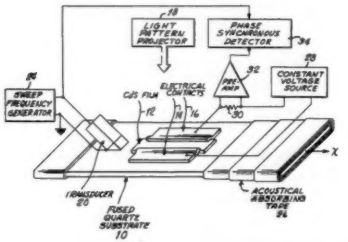
3,836,711

Patent Not Issued For This Number

3,836,712
DIRECT ELECTRONIC FOURIER TRANSFORMS OF OPTICAL IMAGES

Philipp G. Kornreich, 5548 Bear Rd., North Syracuse, N.Y. 13212 and Stephen T. Kowel, 111 Lafayette Rd., Syracuse, N.Y. 13205

Division of Ser. No. 319,680, Dec. 29, 1972. This application May 30, 1973, Ser. No. 365,054
Int. Cl. H04n 5/30
U.S. Cl. 178—7.1 36 Claims

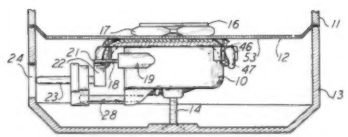


Method and apparatus for directly converting between optical images and the spatial Fourier transforms of optical images by interacting sound waves and light. Controlled sound waves couple with optical images, and electrical signals may be derived from this coupling which are functions of the spatial Fourier transforms of the entire optical images. In a reverse process, optical images are obtained directly by coupling controlled sound waves with electrical signals which are a function of the spatial Fourier transforms of the optical images and with light.

3,836,713
UNITIZED ELECTRIC HEATER ASSEMBLY FOR A COFFEE PERCOLATOR

Kenneth M. Halvorson, Sr., 2909 Ruby Ave., Racine, Wis. 53402

Filed Sept. 4, 1973, Ser. No. 394,305
Int. Cl. F27d 11/02
U.S. Cl. 219—441 9 Claims

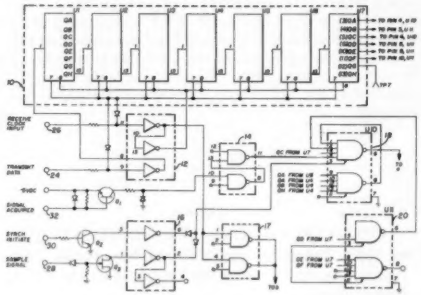


A unitized electric heater assembly for a coffee percolator and having a body member which contains and supports a heater wire and a warming coil. An electric connector block is fixedly mounted on the body by means of a bar which spaces the block from the body, and the block has electric connection pins embedded therein and extending therefrom for releasable connection with the usual electric plug. The pins and the wires are electrically connected, and a thermostat is included in the circuit. The body member has recesses and ears for snugly securing the warming coil on a surface on the body member, and the surface has a shoulder thereon, all so that the warming coil can be securely held in a fixed position on the body member and the entire structure is unitized so that it can be assembled with a coffee percolator without further positioning or manipulation of the warming coil or any other part.

3,836,714
DIGITAL VOICE DETECTOR

William J. Pomper; Charles G. Wilhelm, and Leonard M. Yancey, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 24, 1973, Ser. No. 391,186
Int. Cl. G10l 1/04
U.S. Cl. 179—1 SC 5 Claims

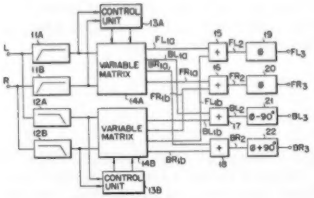


Digital apparatus for detecting the presence of voice in a vocoder output signal to produce a push-to-talk (PTT) signal for simplex operation of communication apparatus. When voice is detected by shift register and logic detection apparatus, a signal is generated that sets a hold circuit which supplies a PTT output for generation of an isolated key signal. The hold circuit is reset each time that voice is detected in the vocoder signal; therefore, PTT is maintained until there are no voice signals present during a complete hold period which is switch-selectable. A sampling signal for voice detection and a synchronization signal are supplied to the voice detection circuit by interface circuitry.

3,836,715
DECODER FOR USE IN 4-2-4 MATRIX PLAYBACK SYSTEM

Ryosuke Ito, and Susumu Takahashi, both of Tokyo, Japan, assignors to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Sept. 4, 1973, Ser. No. 394,107
Claims priority, application Japan, Sept. 9, 1972, 47-90591
Int. Cl. H04r 5/04
U.S. Cl. 179—1 GQ 8 Claims



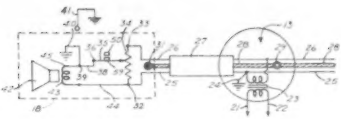
A decoder is provided with variable matrixes capable of improving separation characteristics of four outputs. Two channel signals are divided by filters into a plurality of frequency bands, and the variable matrix is provided for each band to assure a better operation of each variable matrix.

3,836,716

DRIVE-IN SPEAKER INSTALLATION

Samuel M. Reed, 2121 Routt, Lakewood, Colo. 80215

Filed Mar. 14, 1972, Ser. No. 234,609
Int. Cl. H04r 27/00
U.S. Cl. 179—1 DD 4 Claims



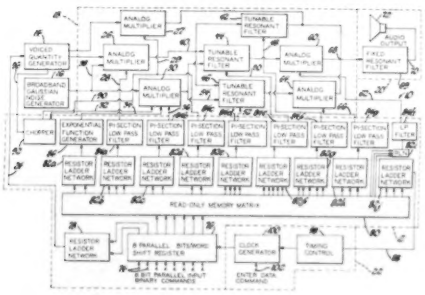
In a sound system for drive-in theatres, speakers are connected in parallel to a common sound signal source in a junction head on a center support post between adjacent automobile spaces. A volume control for each speaker includes a limit stop on the volume control knob to assure that at least a limited amount of resistance is in the loudspeaker circuit so that when the speaker circuit is shunted by replacing it on the post to cut off the sound, it will not cut off the sound to the other speaker in use. Also, a high strength cable is associated with the connecting wires between each speaker and the junction head to prevent accidental or intentional removal or separation of the speaker from its support post.

3,836,717

SPEECH SYNTHESIZER RESPONSIVE TO A DIGITAL COMMAND INPUT

Richard T. Gagnon, Birmingham, Mich., assignor to Scitronix Corporation, Birmingham, Mich.

Continuation-in-part of Ser. No. 119,473, March 1, 1971, abandoned. This application July 21, 1972, Ser. No. 274,029
Int. Cl. G10l 1/10
U.S. Cl. 179—1 SA 35 Claims



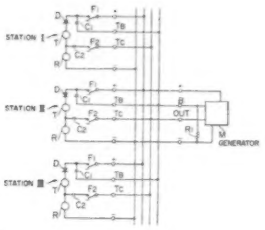
A voice synthesizer including a voiced quantity generator, an unvoiced quantity generator, a control circuit including amplitude and resonance control devices, and an input system for receiving eight-bit digital signals and for producing step function analog control signals to the various phoneme forming control devices. Slow acting filters are connected between the step function generators and the control devices to produce smooth transitions between the analog levels, thus, to realistically simulate the smoothly-changing dynamic quality of human speech. Circuit details are disclosed.

3,836,718

INTERCOMMUNICATION SYSTEM WITH A TIME LIMITED ADVANCE NOTICE SIGNAL

Shigemasa Ichikawa, Nagoya, Japan, assignor to Aiphone Kabushiki Kaisha, Aichi-ken, Japan

Filed Dec. 29, 1972, Ser. No. 319,709
Claims priority, application Japan, May 6, 1972, 47-53068; May 6, 1972, 47-44866
Int. Cl. H04m 1/00
U.S. Cl. 179—1 H 10 Claims



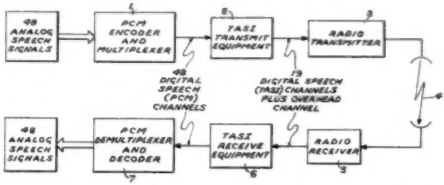
An intercommunicating system provided with at least one generator which produces an advance notice signal controlled by a capacitor for supplying a time-limit bias to the generator whenever an intercommunicating station starts its operation, whereby another station or other stations can be forewarned that some intercommunicating station is cutting in or is ready for listening to.

3,836,719

TASI ASSIGNMENT CONTROL ARRANGEMENT

James M. Clark, Cedar Grove, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed July 2, 1973, Ser. No. 376,095
Int. Cl. H04j 5/00
U.S. Cl. 179—15 AS 23 Claims



A TASI communication system includes P input PCM speech channels to a transmitter and P output PCM speech channels from a receiver and T PCM channels for T of the P channels to be propagated between the transmitter and the receiver, where P is an integer greater than one and T is an integer greater than one but less than P. P PCM speech words corresponding to the P input and output channels are arranged to form a first TDM frame format and T speech words corresponding to the T channels and one-half of a control word are organized to form a second TDM frame format with $2(T+1)$ frames of the second format being organized to form a multiframe. The first $[2(T+1)-2]$ frames of the second frame format in the multiframe includes a different one of transmitted assignment code words for each of the first T of the control words. An assignment control arrangement is provided at both the transmitter and the receiver. The transmitter assignment control arrangement includes a storage means to store in sequence code words identifying the previous assignment for each of the P channels. Logic circuitry is provided

responsive to a first transmit timing signal identifying each of the P speech words in sequence in the first format, a second transmit timing signal identifying each of the T speech words in sequence in the second format, a third transmit timing signal identifying each of the T control words in sequence during each search cycle, a fourth transmit timing signal identifying each of the T control words in sequence during each update cycle at the transmitter and the code words at the output of the storage means to determine the connection and activity status of each of the P channels and to produce code words identifying the assignment of previously connected ones or active ones of the P channels to particular ones of the T channels that are still connected and active and to identify new assignments to enable newly active ones of the P channels to be connected to available ones of the T channels and second logic circuitry responsive to at least the code words at the output of the storage means, the first and fourth transmit timing signals to return the code words to the storage means identifying previously established assignments (previous connections) that are to remain as before and to update the code words stored in the storage means for any new assignments. The receiver assignment control arrangement also includes a storage means to store in sequence code words identifying the previous assignment for each of the P channels as received from the transmitter and third logic circuitry responsive to transmitted code words, a first receive timing signal identifying each of the P speech words in sequence in the first format, a second receive timing signal identifying each of the T speech words in sequence in the second format, a third timing signal identifying each of the T control words in sequence during each update cycle at the receiver and the code words at the output of the receiver storage means to return the code words to the receiver storage means identifying previously established connections that are to remain and to update the code words stored in the receiver storage means for the new assignments.

3,836,720

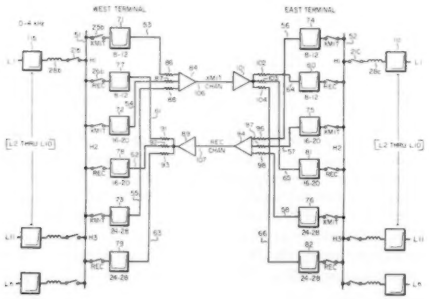
COMBINATION HYBRID AND SWITCHING CIRCUIT AND METHOD UTILIZING RESONANT TRANSFER

Lawrence E. Getgen, Redwood City, Calif., assignor to Armour-Moore Marine Service Limited, Surrey, England

Continuation-in-part of Ser. No. 349,572, April 9, 1973, and a continuation-in-part of Ser. No. 392,720, Aug. 29, 1973. This application Nov. 16, 1973, Ser. No. 416,479

Int. Cl. H04j *1/06*

U.S. Cl. 179—15 FD **14 Claims**



A two-way communication terminal having a plurality of lines and resonant transfer means for effecting selective hybrid separation of any of the lines into unidirectional transmission and receive paths. Sampling gates are mounted in the lines and paths and co-function to simultaneously produce the hybrid and line switching functions. Where several hybrids are used, the resonant transfer filters in the transmit and receive paths may be bandpass filters selecting different portions of the frequency spectrum to thus take advantage of a phenomenon inherent in the circuit to provide frequency division multiplexing of the hybrid paths.

3,836,721

TIME MULTIPLEX COMMUNICATION SYSTEM FOR USE WITH A SPACE SATELLITE

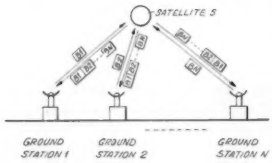
Ryoichi Sugioka, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 850,205, Aug. 14, 1969, abandoned. This application Dec. 23, 1971, Ser. No. 211,766

Claims priority, application Japan, Aug. 15, 1968, 43-58321; Aug. 15, 1968, 43-58322

Int. Cl. H04j *3/06*

U.S. Cl. 179—15 BS **3 Claims**



The time of radiating information signals from a plurality of ground stations to a common satellite is regulated, as is the amount of radiated information, in order to prevent confusion of the signals at the satellite. The instant of receipt, at each ground station, of each time-regulated series or burst of signals is forecast and the forecast controls the operation of the transmitting synchronizing device and the receiving synchronizing device at each ground station.

3,836,722

SYNCHRONIZING METHOD IN TIME-DIVISION MULTIPLEX TRANSMISSION SYSTEMS

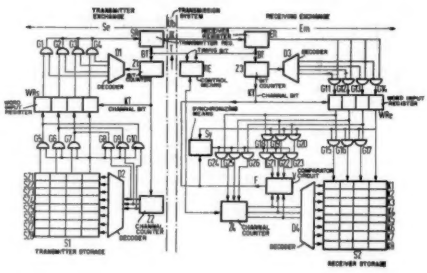
Henrik Muller, and Peter Weidner, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Postfach, Germany

Filed Apr. 17, 1973, Ser. No. 351,973

Claims priority, application Germany, May 3, 1972, 2221629

Int. Cl. H04j *3/06*

U.S. Cl. 179—15 BS **5 Claims**



A method for synchronizing transmitting and receiving exchange stations is disclosed, wherein in unused portions of a time channel a channel number and accompanying designator are stored and transmitted. Upon receipt and detection of the designator, the channel number is compared in a comparator with the current value of a channel counter which designates storage locations in a receiver storage. If a mismatch is found a synchronizing unit is energized causing the next succeeding channel number to be loaded in the channel counter,

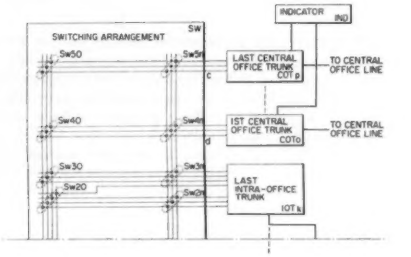
establishing synchronization. As a safety measure, successive comparisons are carried out in the comparator to ensure that not a single isolated comparative match was established.

3,836,723

ANSWERING SYSTEM FOR PBXS

Sigeo Ohara; Fumio Yoshimura, and Kazuhiko Sugai, all of Tokyo, Japan, assignors to Meisei Electric Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 12,239, Feb. 18, 1970, abandoned. This application Sept. 14, 1972, Ser. No. 289,163
Claims priority, application Japan, Feb. 26, 1969, 44-14480
Int. Cl. H04q *3/62*
U.S. Cl. 179—18 AD **4 Claims**



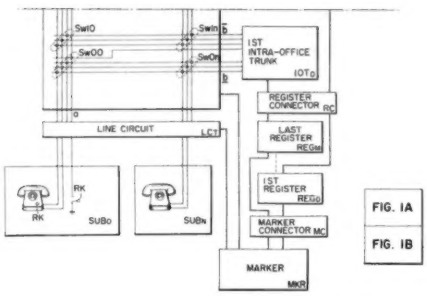


FIG. 1A

FIG. 1B

In a PABX a subscriber responds to an incoming call from a central office trunk by going off-hook so a marker can establish a connection to a register through an idle intra-office trunk. The register produces a dial tone. The subscriber then dials a predetermined digit, to which the register responds by engaging the marker which seizes the one central office trunk on which the incoming call appears and changes the route from the subscriber to that trunk. Instead of dialing the subscriber may press a key that affects the register as if the predetermined digit had been dialed. When all registers are busy the marker bypasses the register and responds directly to change the route.

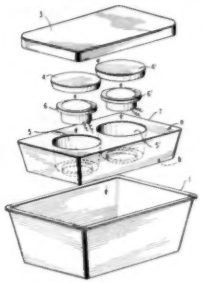
3,836,724

FOUR CHANNEL HEADPHONE

Haruji Yamazaki, Tokyo, Japan, assignor to Chuo Denshi Kogyo Co., Ltd., Gunma, Japan

Filed Dec. 26, 1972, Ser. No. 318,041
Claims priority, application Japan, Dec. 27, 1971, 46-122648
Int. Cl. H04r *1/28*
U.S. Cl. 179—182 R **4 Claims**

An earphone for a four channel headphone has a filling material of light weight and good sound absorbing nature closely fitted inside a unit case. Two cylindrical or conical holes are provided in the filling material in the unit case. A sound generating element is provided at the bottom of each of the holes so that the sound generating element is directed



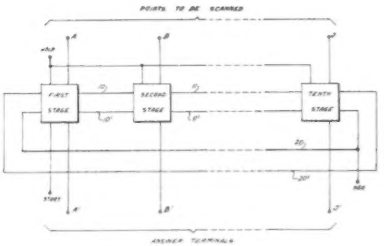
toward the free open end of the unit case and a space is maintained in front of each of the sound generating elements. The free open end of each of the holes is closed by a lid made of a gas permeable material.

3,836,725

SCANNER FOR AUTOMATIC TELEPHONE EXCHANGES

Nadios Celestini, Milan, Italy, assignor to GTE International Incorporated, Stamford, Conn.

Filed Oct. 10, 1972, Ser. No. 295,968
Claims priority, application Italy, Feb. 12, 1972, 19256/72
Int. Cl. H04m *3/22*
U.S. Cl. 179—18 FG **14 Claims**

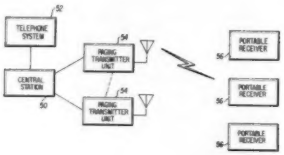


A scanner for repetitively sampling each of a group of telephone circuits to determine whether they are busy or free. The scanner employs a first terminal set containing a selected number of terminals, a second terminal set containing a like number of terminals and scanning means disposed between these sets. Each first set terminal is at a first potential when its circuit is free and at a second potential when its circuit is busy. Each second set terminal is at a third potential when the corresponding circuit is free. The means scans each first terminal in turn to locate the first terminal in the first set which identifies a free circuit. At this point the scanning means discontinues the scanning action and changes the potential of the corresponding second set terminal to indicate that the corresponding circuit is free. The action is cyclical. The means includes a number of like stages, each stage being coupled between a corresponding first set terminal and a corresponding second set terminal. Each stage includes a read relay and a thyristor. The scanner operates much faster than conventional electromechanical scanners.

3,836,726
DATA TRANSMISSION METHOD AND APPARATUS

Joel D. Wells; Albert S. Sabin, both of Orlando; William J. Kahn, Maitland, and William K. Wigner, Kissimmee, all of Fla., assignors to Martin Marietta Corporation, New York, N.Y.

Filed Oct. 25, 1971, Ser. No. 191,855
Int. Cl. H04m 7/04
U.S. Cl. 179—41 A 75 Claims

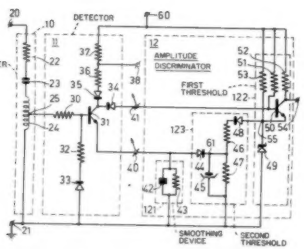


A plural transmitter, digital data transmission and remote control system in the environment of a paging system in which mutual interference by the transmitters is eliminated through the sequencing thereof. Embodiments compatible with existing tone systems are disclosed for both plural system-single area operation and for plural system-plural area operation. A novel receiver and method of receiver synchronization and time slot selection as a function of received signal characteristics are also disclosed, as is the novel evaluation of a digital data signal, power conservation, and fail safe operation with existing telephonic switching equipment.

3,836,727
SIGNAL RECEIVER FOR RECEIVING SIGNALS OF DIFFERENT FREQUENCY

Conrardus Ludovicus Anthonius Hillekens, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 221,245, Jan. 27, 1972, abandoned.
This application June 29, 1973, Ser. No. 374,905
Int. Cl. H04m 1/50
U.S. Cl. 179—84 VF 4 Claims

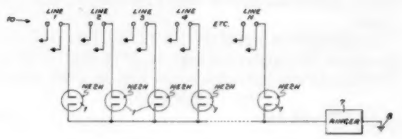


A signal receiver for receiving signals of different frequencies comprising a group of frequency channels; each of which comprises a filter device tuned to a signal frequency and a detector connected to the filter. A device responsive to increases in the signal amplitudes is coupled to the filter devices of the group of frequency channels. A signal testing device is connected to the output of and is continuously activated by the device responding to increases in the signal amplitude to determine the validity of the received signals. The device for responding to increases in the signal amplitude comprises a smoothing filter connected to the detector, a first threshold circuit for obtaining a threshold value determined by the amplitude of the signals supplied to the detector, and a second threshold device for limiting the varying threshold value to a given value.

3,836,728
TELEPHONE RINGER SHARING ARRANGEMENT

Harlan E. Miller, Old San Juan, P.R., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Feb. 14, 1973, Ser. No. 332,466
Int. Cl. H04m 3/02
U.S. Cl. 179—84 R 3 Claims

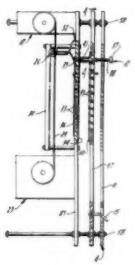


This telephone ringer arrangement permits two or more telephone lines to share a single ringer and ringer multiplier. A neon lamp is connected to the ring side of the telephone line and in series with the telephone ringer. Additional neon lamps are connected in parallel to additional telephone lines, while also being connected in series with the same ringer. Use of, for example, NE2H high voltage neon lamps allows enough current to pass to operate the ringer, while a particular one does not interfere with the associated lines as it will not ring through the neon of another line.

3,836,729
AUTOMATIC TELEPHONE SIGNALLING APPARATUS

Anthony J. Wodenka, c/o Mr. Harry G. Kososki, 5840 E. Lafayette Blvd., Phoenix, Ariz. 85018

Filed July 3, 1972, Ser. No. 268,527
Int. Cl. H04m 1/45
U.S. Cl. 179—90 B 8 Claims

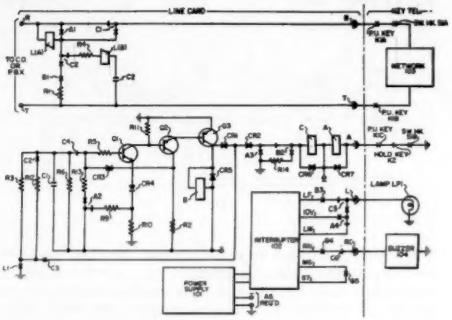


An electromechanical telephone dialer for connection to a conventional telephone system including a dial switchboard matrix having a plurality of columns each with 10 openings, one each of the telephone number digits. A contact strip is secured adjacent each column. An input board has a contact button for each opening, with depressions extending the contact button passed the associated strip. A carriage moves a leaf spring contact over each column to complete the circuit from the depressed button to the strip. A similar interlock board is mounted in stacked relation and has a common switch for each column actuated by the aligned buttons. The circuit boards and a stripping switch are interconnected to sequentially scan each of the columns, with the first column scanned until the appropriate character related contact means is engaged. The carriage is spring reset and coupled to actuate the dialing means. The cycle continues until the last number in the final column is transmitted. A drum timer is connected to initiate a code transmitting cycle, transmit a message, if desired, over the telephone lines and then reset the apparatus.

3,836,730
LINE CARD CIRCUIT FOR A KEY TELEPHONE SYSTEM

Richard A. Marshall, Elmhurst, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 14, 1973, Ser. No. 341,020
Int. Cl. H04m *1/00*
U.S. Cl. 179—99 4 Claims

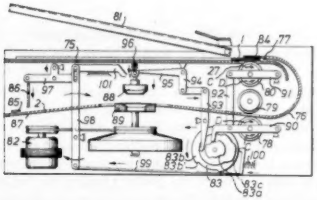


A line card circuit for a key telephone system in which means are provided for sensing ringing current on the line conductors the card is connected to. Also included are means to connect audible and visual signal equipment and to effect placement of the connected line in a hold condition.

3,836,731
PLAYBACK DEVICE AND METHOD FOR FOIL-SHAPED RECORDING CARRIERS

Jurgen Wilisch; Rudolf Goetze; Frank Jaeck; Dietrich Nackmayr; Heinz Rehberg, and Hans-Joachim Thuy, all of Berlin, Germany, assignors to Ted. Bildplatten Aktiengesellschaft AEG-Telefunken Teldec, Zug, Switzerland

Filed Oct. 6, 1972, Ser. No. 295,726
Claims priority, application Germany, Oct. 6, 1971, 2150524
Int. Cl. G11b *17/10, 17/04, 5/82*
U.S. Cl. 179—100.4 R 12 Claims

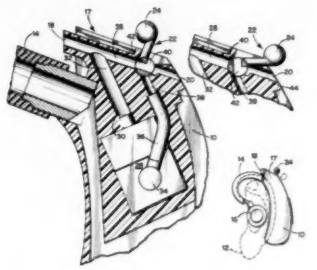


For playing a flexible, disc-shaped record, the record is inserted into and removed from a playback device while contained within a protective cover, the device including a depositing surface, a playback surface and a guide surface, and a drive arrangement for moving the record disc from its protective cover at the depositing surface, into engagement with the guide surface, onto the playback surface, and then, after being played, back again to the depositing surface and into its protective cover.

3,836,732
HEARING AID HAVING SELECTABLE DIRECTIONAL CHARACTERISTICS

Donald L. Johanson, and Rolf Stutz, both of Wayland, Mass., assignors to Audivox, Inc., Newton, Mass.

Filed Sept. 7, 1972, Ser. No. 286,577
Int. Cl. G02c *11/06*
U.S. Cl. 179—107 FD 6 Claims

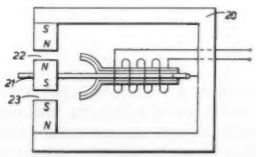


A hearing aid in which the sound reception characteristics are selectable by a user to provide omnidirectional or directional reception, as desired. The hearing aid employs a differential transducer for converting sound information into an electrical output and to which sound energy can be directed in one of two modes. In one mode of operation, for providing omnidirectional reception, sound is received from a front and rear aperture of the hearing aid and directed to a first input of the transducer. In a second mode of operation, for providing directional reception, sound energy received by the front facing aperture of the hearing aid is directed to the first input of the transducer, while energy received by the rearwardly facing aperture is directed to a second input of the transducer to substantially minimize the magnitude of sounds received from rearward positicns.

3,836,733
ELECTRO-ACOUSTIC ARMATURE TRANSDUCER

William Donald Cragg, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 21, 1972, Ser. No. 308,381
Claims priority, application Great Britain, Dec. 23, 1971, 59930/71
Int. Cl. H04r *11/00*
U.S. Cl. 179—119 A 3 Claims

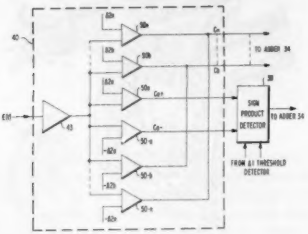


A balanced armature electro-acoustic transducer has small permanent magnets on its armature and on the pole-pieces with each armature magnet's poles facing like poles on the pole-pieces. Thus equal centering forces are set up. The arrangement uses rare-earth/cobalt alloys, which have a very high coercivity.

3,836,734
ADAPTIVE ECHO CANCELLER WITH MULTI-INCREMENT GAIN COEFFICIENT CORRECTIONS

Samuel J. Campanella, Gaithersburg; Henri G. Suyderhoud, Potomac, and Michael Onufry, Jr., Gaithersburg, all of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Dec. 3, 1971, Ser. No. 204,507
Int. Cl. H04b 3/20
U.S. Cl. 179—170.2 8 Claims

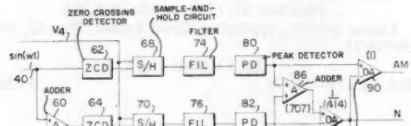


Disclosed herein is an improved adaptive echo canceller including an adaptive control loop for modifying the coefficients of the impulse response values used in performing the digital convolution. The adaptive control loop includes a multi-increment threshold detector producing a plurality of different control signals corresponding to different residual echo signals, e(t), realized by subtracting a synthesized echo from the real echo. An adder, responsive to the different control signals, modifies the coefficients by different amounts corresponding to the plurality of increments.

3,836,735
TELEPHONE LINE CHARACTERISTIC MEASURING INSTRUMENT

Frank R. Bradley, 9 Dash Pl., Bronx, N.Y. 10463

Filed Oct. 16, 1972, Ser. No. 297,756
Int. Cl. H04b 3/46
U.S. Cl. 179—175.3 R 24 Claims

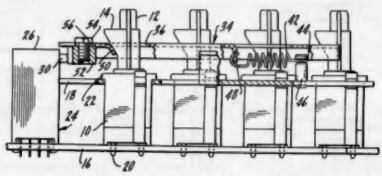


There is disclosed a telephone line characteristic measuring instrument which provides separate indications of the amplitude modulation, phase modulation and uncorrelated noise interference on a transmitted test tone. In my copending application Ser. No. 270,953, there is disclosed an instrument for subtracting a generated tone from the received signal; the three parameters of interest are represented in the difference signal. In the present invention, the difference signal is sampled at three different times during each half cycle of the test tone and the three sequences of samples, after filtering, peak detection and arithmetic combination, provide separate indications of the three parameters of interest.

3,836,736
OPERATOR PLATE COMMON TO MULTIPLE PUSHBUTTON SWITCH OPERATORS ALLOWING SIMULTANEOUS ACTUATION OF PLURAL SWITCH ASSEMBLIES DURING MOMENTARY OR INTERLOCKING MODES OF OPERATION

Bernard J. Golbeck, Crystal Lake, Ill., assignor to Oak Industries Inc., Crystal Lake, Ill.

Filed Aug. 10, 1973, Ser. No. 387,316
Int. Cl. H01h 9/26; G05g 11/00
U.S. Cl. 200—5 B 9 Claims

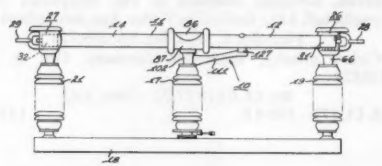


A pushbutton switch array has separate switches, each with an independently operable plunger, said switches being arranged in rows and columns. A plate overlays the switch array and has an opening for each switch plunger. Movement of any one switch plunger causes movement of the plate, with movement of the plate in turn closing a separately positioned switch member.

3,836,737
POSITIVE BLADE ROTATION ARRANGEMENT FOR DISCONNECT SWITCH

Calvin E. Redfern, Portland, Oreg., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed July 16, 1973, Ser. No. 379,802
Int. Cl. H01h 31/00
U.S. Cl. 200—48 A 8 Claims



A cam guide on the stationary contact portion of the disconnect switch cooperates with a hook follower on the rotary blade. The hook follower operates to control the rotation of the blade only when the blade has made positive positioning engagement with the contact. The cam and follower arrangement also insures that the blade is orientated to correct angular position as the blade is bodily rotated to the open position. A contact housing is provided for the current carrying contact fingers which mounts the contact fingers and also serves as an ice and rain shield with corona protection also being provided by the housing.

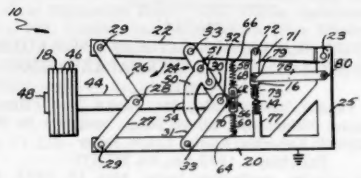
3,836,738
IMPACT SWITCH WITH INERTIA OPERATED TOGGLE LINKAGE ACTUATOR MECHANISM

Raymond W. Baland, 2208 Milam, Amarillo, Tex. 79109

Filed Apr. 13, 1973, Ser. No. 350,989
Int. Cl. H01h 35/02, 3/46
U.S. Cl. 200—61.45 R 5 Claims

An impact-responsive, inertia-actuated switch includes a pair of arms at least one of which is pivoted at its end for

swinging movement toward and away from the other arm and a toggle linkage connected between the arms. Upon impact or high deceleration an inertia member connected to the toggle linkage causes the latter to move over-center against a spring



bias, and the resulting movement of the pivoted arm engages or disengages a pair of electrical contact members carried by the arms. The switch has special utility as the actuator in an automatic crash signal device for aircraft.

3,836,739

LIQUID CONTACT TILT INERTIAL SWITCH WITH MOVABLE METALLIC CONDUCTIVE MEANS RESPONSIVE TO ACCELERATION AND DECELERATION FORCES

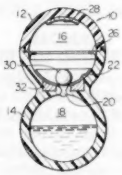
Takuya Endo, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Nov. 12, 1973, Ser. No. 414,942

Claims priority, application Japan, Nov. 14, 1972, 47-130341

Int. Cl. H01h *35/02, 29/10*

U.S. Cl. 200—61.47 **1 Claim**



Upper and lower chambers are connected by a restricted passageway and contain three electrical contacts and a conductive fluid respectively. A ball disposed in the upper chamber and biased by a magnet to close the passageway connects one contact with another when the vehicle undergoes excessive deceleration or when it is tilted on its side. Fluid flows from the lower into the upper chamber to connect the one contact with the third when the vehicle is inverted.

3,836,740

VACUUM TYPE CIRCUIT INTERRUPTER HAVING IMPROVED CONTACTS

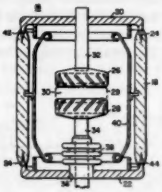
Richard L. Hundstad, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 3, 1972, Ser. No. 249,990

Int. Cl. H01h *33/66*

U.S. Cl. 200—144 B **11 Claims**

A vacuum type circuit interrupter comprising cup-shaped electrodes for improved arc movement during circuit interruption. The contact structures of the vacuum-type circuit interrupter are shaped so that when an arc is established between the contacts during circuit interruption the current path through the contacts to the arc is substantially perpendicular to the arc, for improved arc movement. The arc is initiated at the primary contacting surfaces during circuit interruption and is moved rapidly around the contact area thereby preventing the contact area from being grossly eroded.



3,836,741

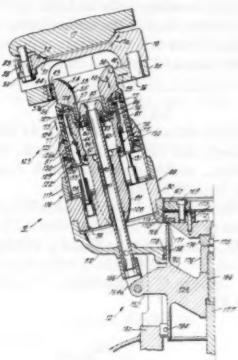
ADJUSTABLE CONTACT NOZZLE AND RETRACTABLE ARCING CHAMBER FOR GAS BLAST CIRCUIT BREAKERS

John H. Golota, Los Angeles, Calif., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Nov. 6, 1967, Ser. No. 680,778

Int. Cl. H01h *33/82*

U.S. Cl. 200—148 R **3 Claims**



A high voltage gas blast circuit breaker has a stationary contact with a central opening and an axially projecting neck. A movable contact, mechanically connected to the same operating rod that temporarily opens a blast valve, moves axially with respect to the stationary contact. A cylindrical baffle surrounds the stationary contact and is pressed against the stationary contact during gas blast conditions to form a gas blast channel which extends through the center of the stationary contact. Biasing springs bias the baffle axially away from the stationary contact.

3,836,742

SWITCH WITH PERIPHERAL CAM ACTUATOR

Steven W. Soos, Chagrin Falls, Ohio, assignor to Lake Shore Electric Corporation, Cuyahoga, Ohio

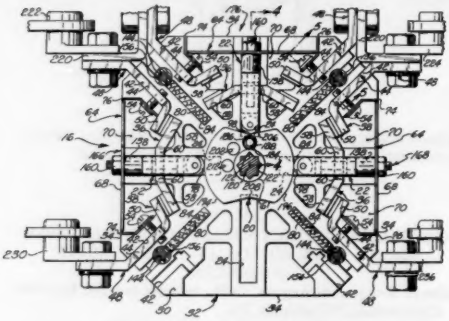
Filed July 2, 1973, Ser. No. 375,479

Int. Cl. H01h *19/62, 19/64, 33/91*

U.S. Cl. 200—153 LB **17 Claims**

An improved switch assembly includes a plurality of housing plates or walls having opposite major sides in which a plurality of fixed contact mounting slots are formed. Fixed con-

tacts extend between the slots in adjacent housing walls. A carrier assembly is reciprocated by rotation of a cam to move movable contacts into and out of engagement with the fixed contacts. The movable contacts are resiliently mounted on a cross bar of a generally H-shaped body of the carrier assembly. The opposite legs of the H-shaped body are slidably disposed in guide slots formed in the major sides of the adjacent housing walls. To retard arcing upon opening of the



contacts, a bellow plate is mounted on the carrier assembly and is moved in a chamber formed between the adjacent housing walls to induce a flow of air around the contacts as they are opened. This flow of air is promoted by shield members which extend between the housing walls and prevent a sideways escape of air upon movement of the bellow plate In addition, barrier plates extend between the adjacent housing walls to further prevent the escape of air as the contacts are opened.

3,836,743

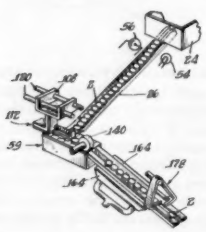
LOCALIZED HEAT TREATING MACHINE

Charles H. Wardwell, and Norman L. Holcomb, both of South Dartmouth, Mass., assignors to Research Engineering & Manufacturing, Inc., New Bedford, Mass.

Continuation of Ser. No. 334,879, Feb. 22, 1973, abandoned, which is a division of Ser. No. 128,040, March 25, 1971, Pat. No. 3,769,103. This application Jan. 21, 1974, Ser. No. 435,333

Int. Cl. H05b *5/02*

U.S. Cl. 219—10.43 **6 Claims**



An article is hardened or tempered in a localized zone. Where the article is a thread-forming device the zone is that part of its thread that does the thread-forming in the workpiece. The hardness of the remainder of the body of the article is left unchanged. The localized hardening is carried out by a method that includes high frequency induction heating only of the zone followed by quenching of the zone whereby the hardened zone is a skin of predetermined depth. A machine for making articles in accordance with the method comprises means for delivering the articles in succession to an induction heating element, a mechanism for advancing the articles through the heating element for progressive heating of the surface of the article in the localized zone to a predetermined depth, a quenching manifold for applying a spray of quenching liquid to the heated articles from the heating element and conveying them to the quenching manifold.

3,836,744

INDUCTION HEATING APPARATUS HAVING A COVER PLATE FOR MINIMIZING THERMAL EXPANSION EFFECTS

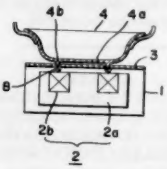
Kiyoshi Taketo, Itami; Toshio Ito, Osaka, and Fikutaro Kishimoto, Nishinomiya, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 4, 1973, Ser. No. 357,171

Claims priority, application Japan, May 17, 1972, 47-48970; Oct. 5, 1972, 47-100100; Nov. 21, 1972, 47-134146

Int. Cl. H05b *5/04*

U.S. Cl. 219—10.49 **1 Claim**



An induction heating apparatus for induction-heating a heated apparatus by an exciter excited by the standard line frequency for generating an alternating magnetic field. The apparatus comprises a high resistant non-magnetic metal plate, preferably of stainless steel, placed at the surface between the heated apparatus and the exciter. Various configurations of grooves can be provided in the plate to minimize the effects of thermal expansion.

3,836,745

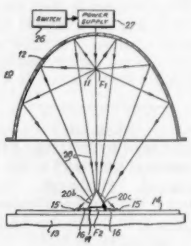
SOLDERING METHOD

Bernard J. Costello, Ringoes, N.J., assignor to Argus Engineering Company, Hopewell, N.J.

Division of Ser. No. 828,041, March 13, 1969, Pat. No. 3,592,992, which is a division of Ser. No. 561,112, June 28, 1966, Pat. No. 3,469,906. This application July 9, 1971, Ser. No. 161,305

Int. Cl. B23k *1/02, 1/04*

U.S. Cl. 219—85 **4 Claims**



A method for selectively heating predetermined portions of members through the use of a radiant energy absorbent material deposited upon the member which is heated by a source of radiation, preferably of the infra red type. The technique is also extremely advantageous for use in solder

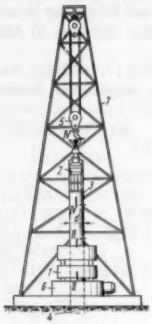
coating member and/or joining members through the use of a solder.

3,836,746

EQUIPMENT FOR RESISTANCE BITT-WELDING

Vasily Alexeevich Sakharnov, bulvar Likhacheua, 3, kv. 64; Alfred Nikolaevich Popov, ulitsa Sholom Aleikhema, 15/2, kv. 106; Vladimir Ivanovich Tishura, ulitsa Nikolaya Gastana 6, kv. 7; Boris Afanasievich Galyan, ulitsa Lenina 88/92, kv. 110, and Jury Valentinovich Skulsky, ulitsa Bastionnaya 10, kv. 30, all of Kiev, U.S.S.R.

Filed June 1, 1973, Ser. No. 366,211
Int. Cl. B23k *11/02*
U.S. Cl. 219—101 10 Claims



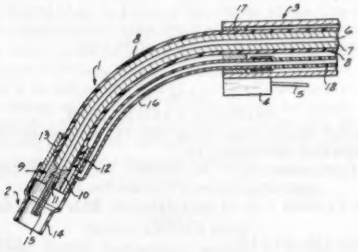
A resistance butt-welding equipment for welding casing pipes above the well head into a string and subsequent running the string into the well, comprising a grip whose maximum overal dimensions do not exceed the outer diameters of the casing pipe. This allows the welded casing string to be lowered through a welding machine thereby achieving higher production efficiency.

3,836,747

GAS WELDING CABLE AND GUN THEREFOR

Paul M. Wlos, Crete, Ill., assignor to Welding Specialties, Inc., Thornton, Ill.

Filed Feb. 26, 1973, Ser. No. 335,955
Int. Cl. B23k *9/12*
U.S. Cl. 219—130 9 Claims



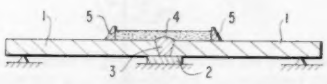
An arc welding gun, particularly for the use of the so-called MIG and TIG welding processes, in which the gun is constructed from an integral end portion of a welding cable, which is preferably of hollow construction, having a bore therethrough for the passage therethrough of a wire welding electrode or a shielding gas. Where wire electrode is supplied to the cable, a shielding gas may be supplied through an additional conduit external to the electrical conductor or the cable. The gun may be provided with control means, for example a manually actuatable switch, and as the terminal fitting of the welding head assembly is connected directly to the metallic conductor of the cable, all electrical joints are eliminated between the terminal fitting of the gun and the opposite end of the cable, preferably the connector terminal to the welding proper. As the gun utilizes the welding cable as an integral part, thereof, the terminal end portion, if desired, may be flexible permitting various gun configurations.

3,836,748

PROCESS OF WELDING A HIGH TENSION STEEL

Kiyoshi Terai, and Isao Masumoto, both of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe-shi, Hyogo, Japan

Continuation-in-part of Ser. No. 144,206, May 17, 1971, abandoned. This application Mar. 20, 1973, Ser. No. 343,088
Int. Cl. B23k *9/00, 9/16*
U.S. Cl. 219—137 8 Claims



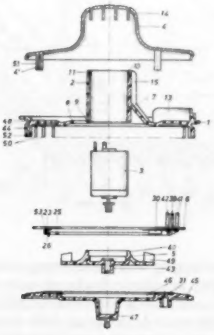
A process of welding a high tension steel comprising welding said high tension steel by the Metal-arc-Inert-Gas welding method with an electrode by which a metastable austenitic steel weld metal is obtained and, thereafter, subjecting said welded high tension steel to (1) a sub-zero cooling to transform the austenitic steel into martensitic steel and (2) an aging treatment at a temperature and for a period of time sufficient to improve the tensile strength and yield strength of the product.

3,836,749

HAIR DRYER

Otto Hubner, Mauerkirscherstrasse 199, 8000 Munich 81, Germany

Continuation-in-part of Ser. No. 231,503, March 3, 1972,. This application Feb. 20, 1973, Ser. No. 333,488
Claims priority, application Germany, Apr. 5, 1972, 2216314
Int. Cl. F24h *3/04*
U.S. Cl. 219—370 7 Claims



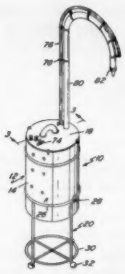
Hair dryer with a low voltage direct current motor driving a blower in a housing to whose air outlet opening is detachably

secured a double-walled inflatable hood having an inner jacket provided with several air outlet openings. A ring shaped heating resistor is mounted concentrically with respect to the impeller. The housing includes a ring-shaped cover plate spaced from and coaxial with a base plate forming a first ring gap for serving as an air intake opening for the blower and a second ringtgap as the air outlet opening for the blower.

3,836,750
HAIR DRYER

Richard Caruso, 7801 Montgomery Ave., Elkins Park, Pa. 19117

Filed Feb. 20, 1973, Ser. No. 333,923
Int. Cl. A45d *20/08*; **H05b** *1/00*
U.S. Cl. 219—370 **6 Claims**

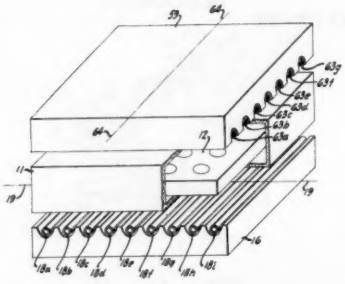


A hair dryer is disclosed having a mobile housing containing a pump and a source of radiant heat. A flexible conduit is connected to an outlet supported on the housing for use in directing the heat and air where desired. The conduit is removably attached to a flexible support on the housing and terminates in a nozzle.

3,836,751
TEMPERATURE CONTROLLED PROFILING HEATER

Emmett R. Anderson, Saratoga, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed July 26, 1973, Ser. No. 382,738
Int. Cl. F27d *11/02*
U.S. Cl. 219—411 **14 Claims**



Heater for producing and maintaining a desired temperature profile along angularly displaced axes. The heater includes a pair of radiant heat sources each having a plurality of heating elements spaced along an axis outside a chamber fabricated of a material which is transparent to the heat energy produced by the heating elements, thermal sensors for monitoring the temperature in regions disposed on angularly displaced axes within the chamber, and means for adjusting the amount of heat energy produced by the heating elements to maintain a desired temperature in each region.

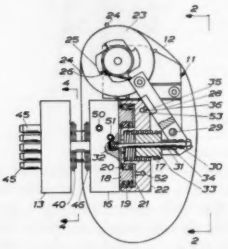
ERRATUM

For Class 219—441 see:
Patent No. 3,836,713

3,836,752
READING APPARATUS FOR A PROGRAM CONTROL SYSTEM

Tommy Henning Bruno Gustavsson, Skarholmen; Karl Gosta Karden, Nacka, and Sven Peter Jonas Westerberg, Saltsjo-Boo, all of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Nov. 17, 1972, Ser. No. 307,564
Claims priority, application Sweden, Nov. 22, 1971, 14890/71
Int. Cl. G06k *7/02*
U.S. Cl. 235—61.11 J **33 Claims**



An apparatus for stepwise advancing and reading a record carrier in the form of a perforated tape, the tape being clamped between two blocks which have aligned channels that form pneumatic signal lines from one block to the other when there are holes in the tape in registration with channels in the blocks. One reader block is fixed and the other is spring biased open and moved to clamping position by a pneumatic piston. The tape is reeled over a driver roller having a cam curve. A lever mechanism is connected to the movable block and engages with a cam on the driver roller so as to transform the movement of the movable block away from its clamped position into an advancing movement of the tape.

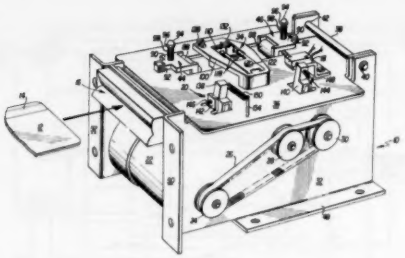
3,836,753
MAGNETIC CARD READER

Raymond Vincent Pass, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 205,091, Dec. 5, 1971. This application Oct. 4, 1973, Ser. No. 403,388
Int. Cl. G06k *7.10, 13/24*; **G11b** *5/48*; **B02c** *13/02*; **G01d** *15/08*
U.S. Cl. 235—61.11 D **12 Claims**

A reader assembly is disclosed for detecting recorded information carried by credit or identification cards. The reader assembly preferably includes a magnetic transducer for reading conventional magnetic codes. The transducer is moveably mounted in the top or cover plate of the reader assembly, which is hinged to permit ready access to the interior of the reader assembly, for emergency servicing or routine maintenance. A card transport mechanism is provided, which is

preferably powered by a reversible D.C. motor. The transport mechanism is activated by insertion of a card into the reader



assembly. The mechanism is adjustable to permit the reader to handle cards of varying thicknesses and widths.

3,836,754

CODED CARD EMPLOYING DIFFERENTIAL TRANSLUCENCIES

Frederick D. Toye, 23511 Tiara St., Woodland Hills, Calif. 91364, and Frederick N. Toye, 3853 Dixie Canyon Ave., Sherwood Oaks, Calif. 91405

Filed Sept. 18, 1972, Ser. No. 289,974

Int. Cl. G06r *19/06*

U.S. Cl. 235—61.12 N **21 Claims**

A translucent but not completely transparent card providing one or more areas or data zones where the light transmissivity through the card significantly differs from the overall light transmissivity of the card. At least two levels of light transmissivity are used in an assortment of cards with both levels being different from that of the card itself as well as from each other. A series of such levels may be used in a system with sensors that detect different levels of light transmissivity. A plurality, large or small, of such data zones may be used in either static or dynamic systems and with digital or other types of coding, enabling a large number of differentiable data to be put on any one of a series of cards and making counterfeiting very difficult. The cards may be plastic with fused-together laminations, and the data zones may be provided on one of the inner laminations, or it may be paper with the data zones provided by surface printing.

3,836,755

SELF-SERVICE SHOP

Kurt Ehrat, Zurich, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

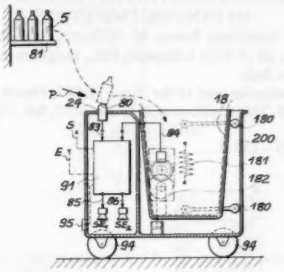
Filed Feb. 12, 1973, Ser. No. 331,884

Claims priority, application Switzerland, Feb. 14, 1972, 2087/72

Int. Cl. G06k *7/00, 15/00*

U.S. Cl. 235—61.7 R **16 Claims**

Equipment for a self-service shop having a check-out station for determining sales data from machine readable data relating to the type of article and its weight applied to articles purchased by a customer; the equipment comprising a container in which the customer places the articles that he wishes to purchase, the container including means for reading the data applied to each article as it is placed in or removed from the container, and weighing means for indicating the increase and decrease in weight of the container resulting from placing or removing an article therein. The equipment also includes a system for evaluating the data read by the reading means and



the weight indication to determine whether the purchased article has been put in or removed from the container and the data correctly read, a signalling system being provided to indicate if either the article data has been correctly read but the article has not been put in or removed from the container or the correct weight has been indicated but the data has not been correctly read. The evaluation system may be in the container or in the check-out station in which case communication between it and the container is by radio.

3,836,756

DIGITAL CONTROL SYSTEM

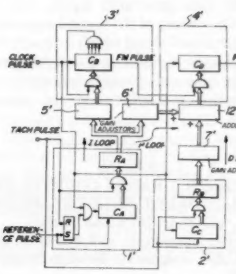
Makoto Yammoto, Tokyo; Tomio Fukuda, Tokyo; Masamichi Nakatake, Tokyo; Takeshi Yoshida, and Hironobu Katayama, both of Sagamihara, all of Japan, assignors to Shiba Electric Co., Ltd. and Nippon Hoso Kyokai, both of Tokyo, Japan

Filed Apr. 5, 1973, Ser. No. 348,418

Claims priority, application Japan, Apr. 5, 1972, 47-33436; June 6, 1972, 47-55572; Nov. 25, 1972, 47-117708

Int. Cl. H04n *5/76;* **G05b** *21/02*

U.S. Cl. 235—150.1 **30 Claims**



A digital control system comprises a digital phase comparator, a digital frequency discriminator, a digital frequency modulator and a digital phase modulator, in said digital phase comparator a phase difference between a reference pulse and a pulse to be controlled being converted into a binary number by quantizing said phase difference with clock pulses having a sufficiently high frequency, said binary number being supplied to said digital frequency modulator consisted of a counter as a

set count to produce frequency modulated carrier pulses, in said digital frequency discriminator a frequency difference between said reference pulse and said pulse to be controlled being converted into a binary number by counting said clock pulses, said binary number being supplied to said digital phase moudulator consisted of a counter to produce phase modulated carrier pulses.

3,836,757

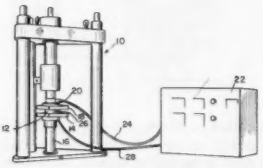
METHOD AND APPARATUS FOR THE COMPUTATION OF DYNAMIC PROPERTIES

Chester L. Nachtigal; Benny M. Hillberry, and Raymond E. Goodson, all of West Lafayette, Ind., assignors to GLN Inc., Lafayette, Ind.

Continuation-in-part of Ser. No. 231,557, March 3, 1972, abandoned. This application May 22, 1973, Ser. No. 363,180

Int. Cl. G06g *7/32*

U.S. Cl. 235—151.3 **13 Claims**



A method and apparatus for computing the dynamic properties of a material or substance. A transducer is used to generate an electrical signal which is representative of an excitation that is dynamically applied to the material, and a second transducer is used to generate an electrical signal which is representative of the response of the material to such excitation. Independent compensation circuits operate on the generated excitation signal and the generated response signal to compensate for any dynamic errors which are introduced into the phase and/or magnitude ratio existing between the signals by the transducing instruments. A pair of generating circuits, whose characteristics are identically and dynamically matched over the frequency range of interest, accept the compensated excitation signal and the compensated response signal, respectively, and operate thereon. The outputs of one of these matched generating circuits is a first generated signal which is closely related to the compensated response signal and a second generated signal which represents the exact time derivative of the first generated signal, i.e., the related response signal. The output of the second matched generating circuit is a third generated signal which is closely related to the compensated excitation signal. These matched generating circuits preserve the gain and phase relationships which exist between the applied excitation and the actual resultant response.

3,836,758

WIDE FREQUENCY RANGE COUNTER SYSTEM UTILIZING AUTOMATIC RANGE SEARCHING AND LOOP COMPENSATION

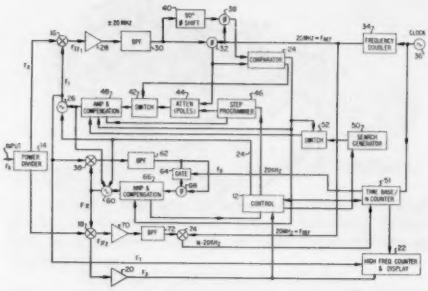
Richard F. Schneider, Sunnyvale, and Arthur R. Bloedorn, Los Altos, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 1, 1972, Ser. No. 302,776

Int. Cl. G01r *23/02*

U.S. Cl. 235—151.31 **8 Claims**

A microwave frequency counter operable over the frequency range of from 1 Hz to 18 GHz is provided employing an input phase lock loop and automatic transfer oscillator techniques for determining the harmonic number at which the input phase lock loop locks, means being provided for automatically searching over a plurality of N number ranges in succession, with means for changing the loop compensation of the input phase lock loop for different N ranges and also



changing the VCO sweep voltage rates for the various N ranges to insure phase loop lock on the preferred N number.

3,836,759

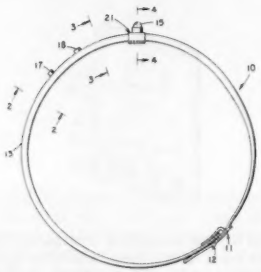
SAFETY LIGHT CIRCUIT

Stephen E. Silverman, 187 Wilton Rd., Westport, Conn. 06880

Filed Aug. 20, 1973, Ser. No. 389,573

Int. Cl. F21v *19/00, 33/00*

U.S. Cl. 240—6.4 W **6 Claims**



A circlet attachable around a body portion enfolds rechargeable batteries which operate a safety light which may flash with the battery circuit. The light is optionally positionable to make good electrical contact.

3,836,760

LIGHTING FIXTURE UNIT

Samuel Harper Robinson, Edmonton, Alberta, Canada, assignor to Hide-A-Lite Industries Ltd., Edmonton, Alberta, Canada

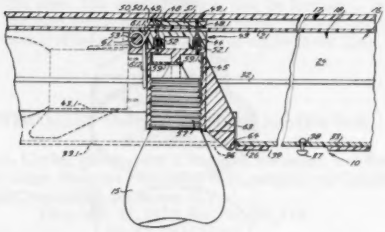
Filed Jan. 6, 1972, Ser. No. 215,895The portion of the term of this patent subsequent to Sept. 17, 1990, has been disclaimed.

Int. Cl. F21p *1/02*

U.S. Cl. 240—10 R **5 Claims**

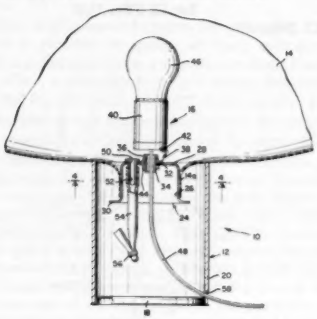
A lighting fixture unit having a housing adapted to be mounted on a building or similar structure, the housing having a wall having a plurality of longitudinally spaced apart openings, a sliding door mounted on the housing, the door having openings adapted to be positioned into and out of register with the housing openings and an electric light socket assembly adapted to receive an electric light bulb hingedly mounted in the housing at each housing opening for swinging the light bulbs from a hidden position within the housing to an

exposed position extending out of the housing when the door is moved from a position covering the housing openings to a



position in which each door opening registers with a housing opening.

3,836,761
ELECTRIC LAMP WITH BALLOON DOME
Leonard Kleinman, P.O. 163 Bergen, Brooklyn, N.Y. 11217, and Harry Zelenko, P.O. 240 E. 61st. St., New York, N.Y. 10021
Filed May 30, 1973, Ser. No. 365,170
Int. Cl. F21p *1/02*
U.S. Cl. 240—10 C **7 Claims**



An electric lamp has a dome in the form of a large inflated balloon containing an electric light bulb and a portion of the socket therefor. The socket is mounted on a heavy metal cup upon which the neck of the balloon dome is mounted with an air-tight seal. In assembling the lamp, the metal cup is located within a hollow cylindrical base, the weight of the cup being sufficient to maintain the balloon dome seated firmly on the base.

ERRATUM

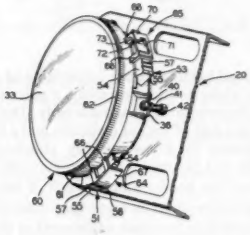
For Class 240—25 see:
Patent No. 3,836,954

3,836,762
DIVER'S LIGHT APPARATUS
Ivor L. Thomason, 2015 S.W. 1st, Des Moines, Iowa 50315
Filed Apr. 26, 1973, Ser. No. 354,491
Int. Cl. F21v *31/00*
U.S. Cl. 240—26 **5 Claims**

A diver's light for various underwater usages which comprises a light means, a container means which may enclose the light means, and a suspension means which connects the light

means and container means and holds the light means in positions external to the container means.

3,836,763
VEHICLE LIGHTING UNIT ASSEMBLY
John J. Hoffman, Spring Arbor, and Jay E. White, Jr., Southfield, both of Mich., assignors to Woodall Industries Inc., Detroit, Mich.
Filed Oct. 12, 1973, Ser. No. 405,773
Int. Cl. F21v *7/00*
U.S. Cl. 240—41.6 **11 Claims**

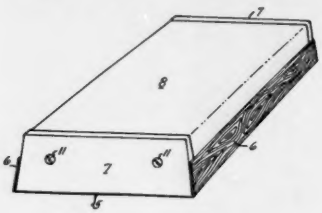


A vehicle lighting unit assembly of the adjustable type including a generally cup-shaped housing having a frontal opening surrounded by a rim on which a sealed beam head lamp is seated. Radially outwardly projecting surfaces are provided on the housing adjacent the opening therein and cooperate with lugs provided on a separate retaining ring to clamp the head lamp between the ring and the housing rim when the ring is turned or rotated in one direction relative to the housing. Portions of a locking device are provided on one of the surfaces and its cooperating lug to prevent rotation of the ring in the opposite direction after the desired clamped position is obtained.

3,836,764
FLUORESCENT LAMP CASINGS
Leon Szer, 35 Bealiba Rd., South Caulfield, Australia
Filed Sept. 26, 1973, Ser. No. 400,892
Int. Cl. F21s *3/00*
U.S. Cl. 240—51.11 R **2 Claims**

A casing for fluorescent lamps having side members each of which includes a longitudinal slot for cooperation with a base

member, an end slot for cooperation with an end member and

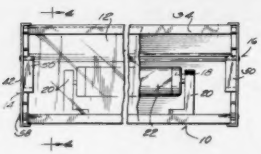


a longitudinal retaining shoulder for cooperation with a diffuser cover.

3,836,765
LIGHTING FIXTURE FOR AQUARIUM OR SIMILAR ARTICLE

Gerald R. Ritzow, 6300 Parkview Rd., Greensdale, Wis. 53129, and Roger C. Ritzow, S53 W 23581 Big Bend Rd., Waukesha, Wis. 53186

Filed Feb. 11, 1974, Ser. No. 441,676
Int. Cl. H05b *33/02*
U.S. Cl. 240—51.11 R **6 Claims**



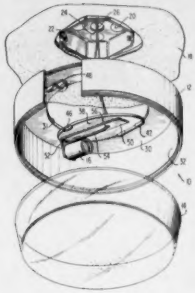
An elongated lighting fixture comprising an elongated hood member, an elongated lens member, a pair of end cap members and a fluorescent light subassembly. The subassembly is comprised of a pair of socket members and a fluorescent bulb with the socket members slidably attached to the hood member. The end cap members are removably attached to opposite ends of the hood member. Each of the end cap members has a plurality of break-away spacer members formed integrally therewith to facilitate adjustment of the overall length of the fixture.

3,836,766
LIGHT FIXTURE

Seymour Auerbach, 1225 19th St. N.W., Washington, D.C. 20036

Filed Feb. 1, 1973, Ser. No. 328,622
Int. Cl. F21s *1/02*, *3/02*, *5/00*
U.S. Cl. 240—73 DA **30 Claims**

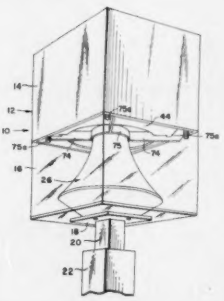
The light fixture includes a base secured either directly to the ceiling or wall surface about the opening to the junction box, i.e., independently of the junction box, or directly to the junction box. The base carries an element movable between a position overlying the junction box precluding access thereto and a position spaced from the junction box and providing access to the junction box. The element is preferably hinged to the base but may be otherwise connected thereto, i.e., by screwthreads, cams, snap fit, or the like whereby access to the junction box can be selectively obtained. The receptacle for the light source is carried by either the movable element or the base of the light fixture. By first securing the base to the ceiling or junction box and moving the element to the position providing access to the junction box, quick electrical connection can be effected without the need for simultaneously supporting the fixture while effecting the connection. Also, selective access to the junction box after the light fixture is installed is obtained.



3,836,767
LIGHTING FIXTURES

Martin Lawrence Lasker, Metuchen, N.J., assignor to Moldcast Manufacturing Company, Newark, N.J.

Filed Feb. 26, 1973, Ser. No. 335,538
Int. Cl. F21s *3/10*
U.S. Cl. 240—25 **44 Claims**



A compact lighting fixture, principally for outdoor use, employs a pair of reflectors in conjunction with a lamp having an elongated light source. One of the reflectors has a downwardly facing concave internal reflecting surface which surrounds the light source. The other reflector is located beneath the first reflector and has a concave external reflecting surface which faces outwardly and upwardly. The light source is aligned with the vertical axis of the fixture, which is the common axis of both reflectors. Light emitted from the source is reflected from the upper reflector to the lower reflector and is then projected outwardly, some light being projected outwardly directly from the source, without reflection. A glare baffle extends inwardly from the bottom of the upper reflector. As a result of this optical system, most of the light is projected from the fixture at a high angle relative to downward vertical, but light cut-off occurs at a selected angle less than 90° relative to downward vertical. The light is evenly distributed on the ground illuminated by the fixture. Glare is minimized. The upper reflector can be modified to produce asymmetrical horizontal light distribution patterns. The reflectors are surrounded by an enclosure having an opaque upper section and a light-transmitting lower section. Reflections from the inner surface of the loser section may provide fill-in illumination near the vertical axis of the fixture. A structural tube extends

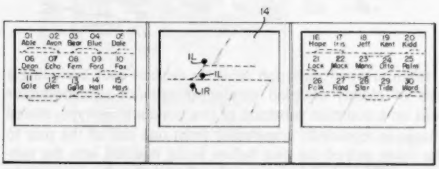
upwardly through the lower reflector and supports the upper reflector and the upper section of the enclosure upon radially extending arms. The tube may contain a spring-biased, centered receptacle for the lamp, which rests upon a seat at the top of the tube. The upper reflector may be formed in two parts, one part being fixed to a removable top wall of the upper section of the enclosure to provide access to the lamp.

3,836,768

CENTRALIZED TRAFFIC CONTROL SYSTEM FOR RAILROADS

James A. Clarke, Hilton; John J. Jacobus, Rochester, and Eric Peter Lager, Honeoye Falls, all of N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed Sept. 22, 1972, Ser. No. 291,519
Int. Cl. B61l 27/04
U.S. Cl. 246—3 **10 Claims**



A centralized traffic control system for governing from a central office a plurality of groups of track switches and signals which are disposed along a stretch of railway track. At the central office, a plurality of switch means designates a selected control for any switch or signal in any selected group. Also, an indication storage means is provided at the central office which is responsive to the conditions of the track switches and signals at each of the field stations and also responds to indicate the occupancy of the associated trackway. The indication storage means may drive a cathode ray tube display. An electonic digital computer is also provided which includes means for storing a program comprising a plurality of sub-routines each of which is associated with a corresponding one of the groups of switches and signals, also known as field stations. When a particular control is designated at the central office for any selected one of the field stations, the particular subroutine of the program which is associated with that particular field station is selected, and thereafter, on successive steps of the sub-routine, selected ones of the indications are interrogated in order to make possible a final determination as to whether the designated control is a permissible control. If the designated control is permissible, a code is transmitted to the selected field station to effect that control and thereafter an indication is transmitted back to the central office indicating that the control has become effective.

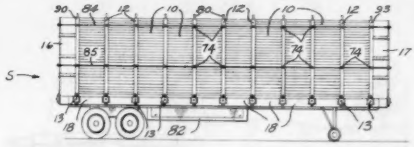
3,836,769

RETRACTABLE WALLS

Walter Fred Wilson, 133 W. Wilken Way, Barstow, Calif. 92802

Filed Nov. 9, 1972, Ser. No. 305,055
Int. Cl. B60p 3/42
U.S. Cl. 296—10 **8 Claims**

Retractable side walls for a flat bed semitrailer comprising panels which can be mechanically raised to form the trailer walls, as needed, and subsequently retracted to convert the trailer back into a flat bed vehicle. Each of these panels is flexible enough for rolling around a core drum, to which one end is affixed, and there is a separate core drum for each of the panels rotatably mounted in a housing situated at an edge of the truck bed. This housing has a space for in-and-out movement of the panel to permit lowering and raising of the truck walls. Within the housing, there is a mechanism for causing the panel to unwind from its core drum, or wind onto the drum, when driven by an air impact wrench. Anchored in pockets around the outer edge of the trailer bed are a number of relatively flat upright stakes. The stakes are positioned so that there is one in the space between each pair of adjacent



panels. The edges of the stakes have grooves of V-shaped cross section, and the panels have male edges of V-shaped cross section to slide matingly in the grooves of the stakes. The panels are thus guided upwardly, between the stakes, as they are unwound from the core drums, to form the trailer walls.

3,836,770

APPARATUS FOR MEASURING THE DISTANCE BETWEEN TWO SUCCESSIVE OBJECTS

Conrad Helmcke, Munich; Walter Hermann, Weissenfeld, and Peter Kraus, Munich, all of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed Aug. 3, 1972, Ser. No. 277,783
Claims priority, application Germany, Aug. 7, 1971, 2139617
Int. Cl. B61l 3/22
U.S. Cl. 246—167 D **11 Claims**

The invention relates to and an apparatus for measuring the distance between two spaced objects and wherein either or both of said objects may be movable with respect to each other and/or with respect to a fixed point. Said objects, such as vehicles arranged along a track, each carry a transmitter for the emanation of signals and a receiver for the reception of signals emanated by an adjacent object. The signals are fed to a conductor extending along said track and able to provide a sufficiently rapid attenuation of said signals whereby same may serve as an accurate indicator of relatively short distances between the objects. For example, such conductor can comprise at least two parallel conductors connected throughout their length by resistive means of relatively high conductivity. Supplemental transmitters may also be applied to said objects to suppress transmitted signals in one direction while permitting such transmission in another direction in order to minimize interference with the signal received from another object, as a vehicle, in the one direction. Thus, in a line of three vehicles, the transmitter on the second vehicle will not interfere with the receiver on the second vehicle but will effectively send signals to the receiver of the third vehicle.

3,836,771

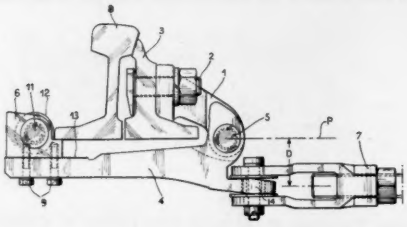
TRACK SWITCH WITH LATCH

Jean-Jacques Berst, Reichshoffen, France, assignor to Pierre Andre Berst, Reichshoffen (Bas-Rhin), France, a part interest

Filed Jan. 26, 1973, Ser. No. 327,092
Int. Cl. E01b 7/00
U.S. Cl. 246—448 **3 Claims**

A track switch for moving a horizontal switch tongue, comprises a bracket mounting the tongue for limited vertical

swinging movement on a latching member, a control rod for horizontally moving the latching member, and on the side of the fixed rail opposite the bracket, a support carried by the



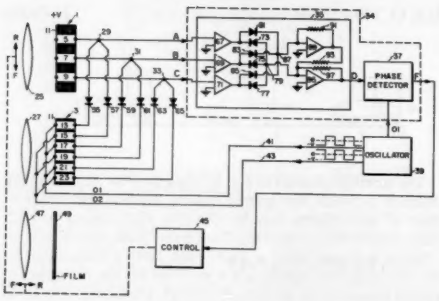
latching member and supporting a roller whose axis is parallel to the fixed rail, the roller projecting beyond its support. The support is adjustable toward and away from the bracket.

3,836,772

DETECTING APPARATUS FOR DETERMINING WHEN IMAGE IS IN FOCUS

Norman L. Stauffer, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed July 18, 1973, Ser. No. 380,500
Int. Cl. G01j 1/36
U.S. Cl. 250—204 **6 Claims**



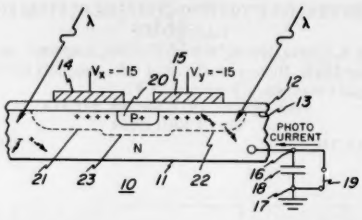
A focus detecting system includes first and second lens devices for forming first and second auxiliary images of an object on first and second detector devices, respectively. Each detector device includes a plurality of linearly displaced light responsive elements. One of the lens devices is movable with respect to its associated detector device to shift the light distribution pattern of the corresponding auxiliary image in the direction of linear displacement of the light responsive elements. The movable lens device is so coupled to a movable objective lens, which focusses a principal image of the object on a light sensitive film, that when the principal image is in focus, the light distribution patterns of the first and second images will be correspondingly positioned with respect to the first and second detector devices, respectively. A reference signal of a predetermined frequency controls a switching circuit to compare the electrical signals from the light responsive elements in the first detector device, alternately, at the predetermined frequency of the reference signal, with electrical signals provided by first and second predetermined groups of the light responsive elements in the second detector array. Signals are thereby provided which are processed and phase detected to provide an output signal representative of the direction that the objective lens is displaced from a focus position at which the principal image is in sharpest focus.

3,836,773

DEVICES FOR SENSING RADIATION

Hubert K. Burke, Scotia, and Gerald J. Michon, Waterford, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 30, 1973, Ser. No. 355,571
Int. Cl. H01j 39/12
U.S. Cl. 250—211 J **10 Claims**



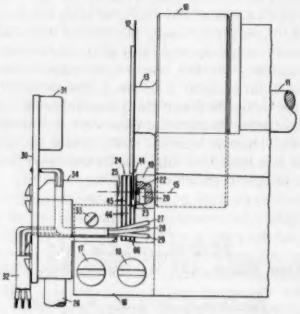
In an array of radiation sensitive devices each including a pair of closely coupled conductor-insulator-semiconductor cells on a common substrate of one conductivity type, stored charge is repeatedly transferred from one cell of the pair to the other cell of the pair before being injected into the substrate and an electrical signal developed thereby. In order to minimize charge loss to the substrate and noise ultimately produced in the electrical signal due to the repeatedly incomplete transfer of charge between the cells of a pair, a region of opposite conductivity type is provided in the substrate substantially surrounding the semiconductor portions of the capacitor cells and contiguous therewith.

3,836,774

CAPSTAN-TACHOMETER ASSEMBLY

Adolfo M. Guzman; Paul Y. Hu, both of Boulder, and Tracy N. Waller, Broomfield, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 6, 1973, Ser. No. 385,942
Int. Cl. G01d 5/34, 5/36
U.S. Cl. 250—231 R **9 Claims**



A tape drive capstan includes an optical see-thru tachometer disc having a large number of alternating opaque and transparent regions, such that the passage of each opaque region is a measure of a unit distance of capstan rotation. Rotational movement and direction are sensed by a two-phase tachometer which includes the capstan disc as the moving member thereof. Two phototransitors are closed spaced and view the tachometer disc through a stationary slit mask. A single light source and a mechanical light collimator illuminate the capstan disc with two closely spaced and parallel light

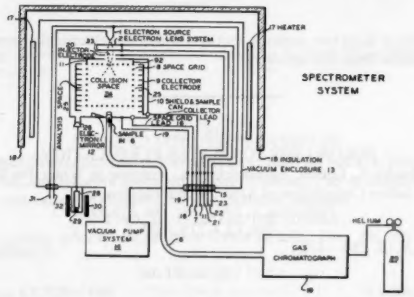
paths having minimum crosstalk. The phototransistors, mask and light collimator are accurately aligned.

3,836,775

ELECTRON IMPACT SPECTROMETER OF HIGH SENSITIVITY AND LARGE HELIUM TOLERANCE AND PROCESS OF CHARACTERIZING GASEOUS ATOMS AND MOLECULES BY THE ENERGY LOSS SPECTRUM

Stuart L. Ridgway, Princeton, N.J., assignor to Princeton Applied Research Corporation, West Windsor Township, N.J.

Filed Mar. 8, 1973, Ser. No. 339,544
Int. Cl. G01n *23/02*
U.S. Cl. 250—305 **55 Claims**



Process of and apparatus for measuring the energy loss of electrons in collisions with gaseous material, e.g., gaseous sample atoms and molecules for the purpose of characterizing (identifying, discriminating between or determining the molecular structure of) the atoms or molecules by the electron energy loss spectrum are provided. A current of low energy electrons is introduced into a region defined by being enclosed in a fine wire grid. The sample atoms or molecules are also in this region. The sample may or may not be diluted with helium gas. Electrons that have collided with the sample or with helium attempt to diffuse from this region out toward a collector electrode whose potential may be varied during the course of obtaining a spectrum. In general, if the kinetic energy of an electron is sufficient for it to surmount the potential hill (in the gravitational plot sense) or electrostatic potential between the collector and the grid, it will eventually be absorbed by the collector, since the area of the collector is purposely made enormously greater than that of the grid. If the kinetic energy of the electron is insufficient to reach the collector, i.e., is insufficient to surmount the potential hill or electrostatic potential between the potential of the grid and the potential of the collector, the electron is eventually absorbed on the grid. Thus the current to the grid is made up of those electrons that have lost sufficient kinetic energy in collisions with the sample a atoms or molecules that they cannot surmount the electrostatic potential between the grid and collector and reach the collector. The measure of this current as a function of the collector potential, e.g., the derivative of the current to the grid with respect to the collector potential, provides a spectrum of energy loss of the electrons particularly useful in characterizing, i.e., identifying, discriminating between, or determining the molecular structure, of the sample gaseous atoms or molecules.

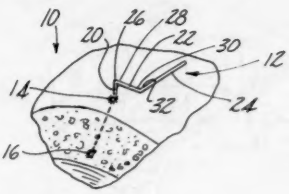
3,836,776

THREE DIMENSIONAL X-RAY OPAQUE FOREIGN BODY MARKER DEVICE

Edwin H. Gullekson, 1721 Laurel Oak Dr., Flint, Mich. 48507

Filed Mar. 1, 1973, Ser. No. 337,017
Int. Cl. G01b *15/00*
U.S. Cl. 250—312 **2 Claims**

A three dimensional X-ray opaque device for aiding in the location of foreign bodies embedded in human flesh, the device having three elongated members disposed at right angles to each other and including an indicating spot to identify a



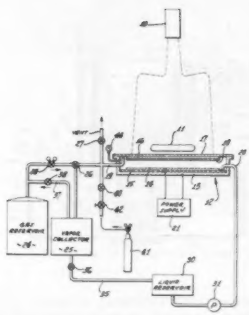
predetermined point on the device. With the use of an X-ray machine the device aids in determining the location of a foreign object embedded in some parts of the human body.

3,836,777

LIQUID DISPLACEMENT GAS RECOVERY SYSTEM FOR ELECTRON RADIOGRAPHY IMAGING CHAMBER

John Henry Lewis, West Los Angeles; Arthur Lee Morsell, Tarzana, and Murray Samuel Welkowsky, Los Angeles, all of Calif., assignors to Xonics, Inc., Van Nuys, Calif.

Filed July 23, 1973, Ser. No. 381,862
Int. Cl. G03b *41/16*
U.S. Cl. 250—315 **8 Claims**



Process and apparatus for providing imaging gas under pressure to the imaging chamber of an electronradiographic system. A pump for providing a flushing liquid under pressure to the imaging chamber for flushing air to exhaust, and a source of imaging gas under pressure for flushing the liquid from the chamber and for charging the chamber, with the pump and liquid also flushing the imaging gas from the chamber after an exposure for recovery of the imaging gas under pressure.

3,836,778

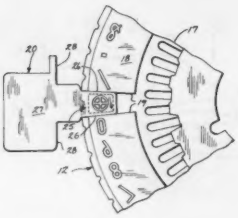
INSERT TEMPLATE FOR A LABEL MAKING MACHINE

James M. Mrozek, Milwaukee, Wis., assignor to W. H. Brady Company, Milwaukee, Wis.

Filed July 25, 1973, Ser. No. 382,510
Int. Cl. B41b *17/22*
U.S. Cl. 95—4.5 R **3 Claims**

A template has a tab portion in which a special character is formed. The template is insertable into the tape discharge

opening of a label-making machine and the tab is positioned in an image-forming station at which the special character is



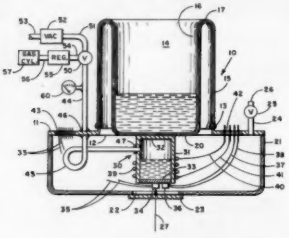
formed on an ultraviolet light sensitive label material when the machine is operated.

3,836,779

COOLING APPARATUS FOR INFRARED DETECTORS

Robert Peter Bruno, Watertown, and Albert Winston Naugler, Wayland, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 22, 1971, Ser. No. 210,668
Int. Cl. G01j *3/02*; F17c *7/00*
U.S. Cl. 250—352 2 Claims



A variable temperature dewar in which a heat load is thermally connected to a heat sink by a short heat pipe, the temperature of the load being varied by varying the pressure in the heat pipe to vary the boiling temperature of a cryogenic fluid contained therein, of which the liquid phase is in conductive thermal contact with the load and the gas phase is in conductive thermal contact with the sink.

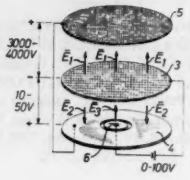
3,836,780

DEVICE FOR SPARK DISCHARGE CHAMBER EMPLOYING SEGMENTED CATHODE

Lars Ebbe Amqvist, Taby, Sweden, and Floris Timmer, Eindhoven, Netherlands, assignors to AGA Aktiebolag, Lidingo, Sweden

Filed Jan. 17, 1972, Ser. No. 218,385
Claims priority, application Sweden, Jan. 29, 1971, 1119/71
Int. Cl. G01t *1/18*
U.S. Cl. 250—385 2 Claims

A spark discharge chamber for detailed study of gamma and beta radiation comprising a plane cathode, a lattice-shaped auxiliary electrode and an anode, said cathode being divided



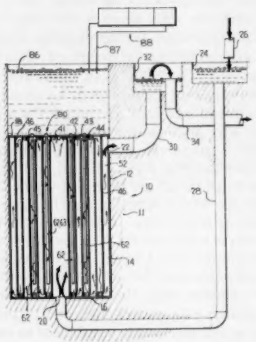
into at least two cathode sections which are electrically insulatable from one another.

3,836,781

IRRADIATOR FOR WATER PURIFICATION

Charles V. Ellison, Alexandria, Va., assignor to Water Purification Corporation of America, Washington, D.C.

Filed Aug. 1, 1972, Ser. No. 276,929
Int. Cl. G21h *5/00*
U.S. Cl. 250—432 8 Claims



An irradiator for sterilizing fluids, particularly contaminated effluents such as sewage. A housing is provided with a plurality of tubular partitions defining a flow path for causing sewage and the like to flow, alternately, back and forth past a series of source tubes containing radioactive material whereby the sewage provides shield means surrounding the radioactive source and becomes sterilized as it passes into and out of the housing.

3,836,782

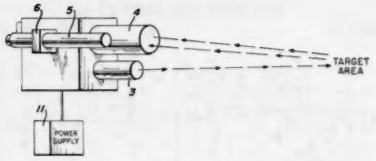
APPARATUS FOR VIEWING A DISTANT FLUORESCENT OBJECT

David K. Forbes, 2116 Crownhill Rd., San Diego, Calif. 92109, and Richard B. Nehrich, Jr., 4019 Marlesta Dr., San Diego, Calif. 92111

Filed May 3, 1968, Ser. No. 726,617
Int. Cl. G01n *21/38*
U.S. Cl. 250—461 6 Claims

A portable casing mounts a short arc ultra-violet light source and an optical system for collimating the light from the source and beaming it onto a distant object which has been

marked with a fluorescent material. The casing further mounts a conventional telescope for detecting and viewing the resulting fluorescence and a second telescope focused into a spectroscope.



3,836,783

RADIOGRAPHIC FILM CASSETTE

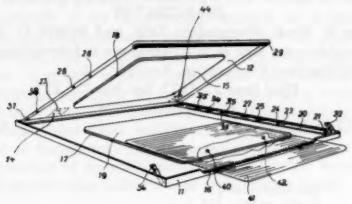
Emile Frans Stievenart, Hoboken; Leo Paul Van Bouwel, Mortsel, and Hendrik Sylvester Plessers, Boechout, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Dec. 27, 1972, Ser. No. 319,062

Claims priority, application Great Britain, Dec. 29, 1971, 60344/71

Int. Cl. G03b *17/26*

U.S. Cl. 250—481 7 Claims



A radiographic film cassette suited for being used in combination with a daylight unloading system is presented. It comprises a cover and a bottom frame which are hingedly connected to each other in such a way that not only a rotation at the hinges occurs, but also a lifting up of the cover near the hinges. In this way the sheet of X-ray material becomes completely free. Further, two deformable pins are provided in the bottom part in order to permit the air to flow under the sheet, avoiding thereby a sticking of the latter to the screens. The cassette is advantageously used with a simple unloading device, placed in front of the entrance slit of a processing machine; the unloading device itself may be supplementarily equipped with means to print identification data on the sheet of X-ray material.

3,836,784

ACTIVATED IODIDE X-RAY IMAGE INTENSIFIER SCREEN

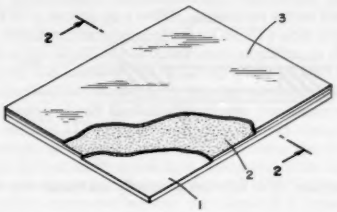
Clayton W. Bates, 755 Rhode Island St., San Francisco, Calif. 94107, and Richard A. Wallace, 43 Kingcote Gardens, Stanford, Calif. 94305

Filed Mar. 6, 1973, Ser. No. 338,500

Int. Cl. H01j *1/62*

U.S. Cl. 250—483 10 Claims

X-ray image intensifier screens are provided having a thin film of activated iodide phosphor in a polyfluorinated, polymeric binder. The greatly enhanced response of the activated iodide phosphor greatly reduces X-ray dosages to patients as compared to present X-ray dosages employing calcium tungstate as the luminescent material.



3,836,785

NEUTRON GENERATOR HAVING A TARGET ON WHICH A BEAM OF HYDROGEN IONS IS INCIDENT

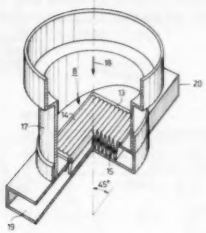
Otto Reifenschweiler, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 158,389, June 30, 1971, abandoned. This application June 5, 1973, Ser. No. 367,169

Claims priority, application Netherlands, July 15, 1970, 7010431

Int. Cl. G21g *3/04*

U.S. Cl. 250—501 10 Claims



A target for a neutron generator having a surface formed of a plurality of V-shaped funnels or grovves with edges coinciding at an acute angle for reducing sputtering of the reaction layer by the hydrogen ions incident upon the target surface.

3,836,786

DIELECTRIC LIQUID-IMMERSED CORONA GENERATOR

Frank E. Lowther, Severna Park, Md., assignor to Purification Sciences, Inc., Geneva, N.Y.

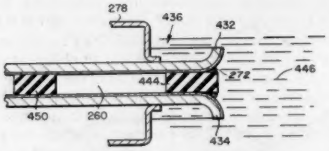
Continuation-in-part of Ser. No. 141,148, May 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 709,485, Feb. 29, 1968, abandoned, which is a continuation-in-part of Ser. No. 612,751, Jan. 4, 1967, abandoned, Continuation-in-part of Ser. No. 830,248, June 4, 1969,. This application Aug. 17, 1972, Ser. No. 281,451

Int. Cl. C01b *13/10*; B01k *1/00*

U.S. Cl. 250—540 18 Claims

A plurality of air-tight corona generating cells of a corona generator are supported in a liquid-tight housing where they are immersed in a dielectric liquid such as transformer oil for preventing arcing between the edges of the two electrodes of each corona generating cell. The dielectric liquid is in heat exchange relationship with the external surface of each elec-

trode and is circulated between a cooler and the housing for cooling the electrodes. A center support disc located between



the electrodes of a cell unexpectedly increases the ozone yield.

3,836,787

APPARATUS FOR EXAMINING THE SURFACE OF AN OBJECT USING ELECTROMAGNETIC RADIATION

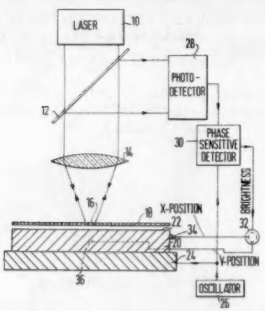
Eric Albert Ash, London, England, assignor to National Research Development Corporation, London, England

Filed July 7, 1972, Ser. No. 269,875

Claims priority, application Great Britain, July 16, 1971, 33560/71

Int. Cl. G01n *21/30*

U.S. Cl. 250—572 **8 Claims**



In order to examine the surface of an object to view detail substantially smaller than the wavelength of the radiation used, the object is mounted behind a plate having an aperture of size equal to the desired resolution and radiation is directed on to the plate and thence, through the aperture on to the surface of the object. The object is vibrated relative to the plate so that light reflected from the surface of the object back through the aperture is modulated with the frequency of this vibration and can thus be distinguished from radiation reflected from the surface of the plate. The apparatus can operate with electromagnetic radiation of optical and microwave frequencies.

3,836,788

INTERNAL COMBUSTION ENGINE CRANKING MOTOR CIRCUIT

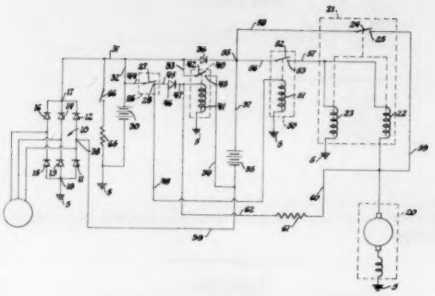
Richard A. Carlson, Pontiac, and Robert E. Eddy, Metamora, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed June 28, 1973, Ser. No. 374,778

Int. Cl. H02p *7/00*

U.S. Cl. 290—50 **4 Claims**

An internal combustion engine cranking motor circuit in which a main and an auxiliary battery are connected in series with the cranking motor during the engine cranking operation. Upon the operation of the normally open electrical contacts of an electrical switch to the electrical circuit closed condition, the operating coils of separate electrical relays are energized. Upon the energization of the operating coil of the first relay, the main and auxiliary batteries are connected in series



through the normally open contacts thereof and upon the energization of the operating coil of the second relay, the cranking motor is connected in series with the main and auxiliary batteries through the normally open contacts thereof.

3,836,789

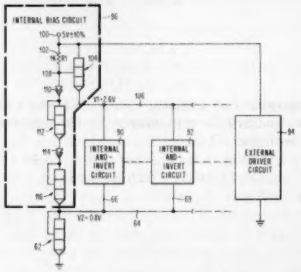
TRANSISTOR-TRANSISTOR LOGIC CIRCUITRY AND BIAS CIRCUIT

James R. Struk, Wappingers Falls, and Robert G. Werner, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 22, 1973, Ser. No. 372,891

Int. Cl. H03k *19/08*

U.S. Cl. 307—203 **6 Claims**

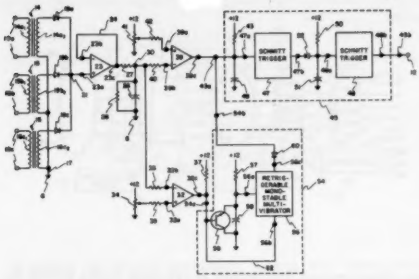


An improved modified transistor-transistor logic (T^2L) circuit having operating voltage compatible with existing T^2L logic blocks which includes a coupling transistor having its base connected to a current source and being selectively responsive to switch current either between its respective base emitter terminals or base collector terminals, and an output transistor having its base connected to the collector of the coupling transistor for generating an output signal at its collector terminal, and an on diode connected to the emitter of the output transistor for providing a current path constituted by the base-to-collector terminals of the coupling transistor, the base-to-emitter terminals of the output transistor, and the on diode. The modified T^2L circuit is also compatible with a lower power supply voltage source.

3,836,790
A-C VOLTAGE DETECTOR

Dustin J. Becker, Sheffield Lake, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

Filed Aug. 22, 1973, Ser. No. 390,349
Int. Cl. H03k 5/20; H02h 3/28
U.S. Cl. 307—235 R 17 Claims

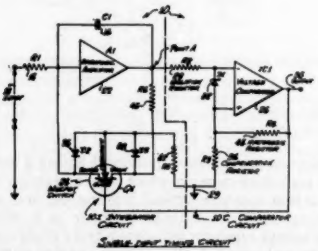


A circuit for detecting whether the peak magnitude of one or more phases of a polyphase voltage has varied outside of acceptable high and low voltage limits. A high voltage detecting network produces a first voltage when the peak amplitude of the input voltage remains below an acceptable maximum and produces a second voltage when the peak amplitude of the input voltage exceeds that acceptable maximum. A low voltage detecting network produces a first voltage when the peak amplitude of the input voltage exceeds an acceptable minimum and produces a second voltage when the peak amplitude of the input voltage fails to exceed that acceptable minimum. A timing network indicates a fault condition if either detector produces its second voltage on a recurrent basis for more than a predetermined time. Together these networks assure that fault indications do not occur in the presence of occasional excessive input voltage excursions or in the presence of normally occurring a-c voltage transients and thus prevent false indications of input voltage faults.

3,836,791
PRESETTABLE SINGLE-INPUT VOLTAGE-TIME INTEGRATOR

Glen L. Galloway, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 13, 1973, Ser. No. 379,144
Int. Cl. H03k 17/26; G06g 7/12
U.S. Cl. 307—293 5 Claims



A timing circuit capable of operation from a single-input waveform, comprising an integrator circuit which includes: (1) a series resistor-capacitor (R–C) combination, one end of the resistor of the R–C combination comprising the input to the timing, and integrator, circuit; (2) an operational amplifier connected across the capacitor of the R–C combination, the amplifier serving to integrate the single-input waveform; and (3) a metal-oxide, semiconductor, field-effect transistor (MOSFET), serving as a switch, connected across the operational amplifier, the source of the MOSFET switch being connected to the input of the operational amplifier, at the junction of the R–C combination, the drain of the MOSFET switch being connected to the output of the operational amplifier.

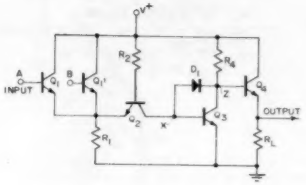
The timing circuit further comprises a comparator circuit which includes (1) a voltage comparator, which compares the two voltages at its inputs, and can detect when the difference between its two inputs equals zero, the output of the comparator being connected to the gate of the MOSFET; (2) an isolation resistor connected between the output of the operational amplifier and one of the inputs of the voltage comparator; (3) a zener diode connected across the two inputs of the voltage comparator; and (4) a compensation resistor having one end connected to the other input of the voltage comparator, the other end of the resistor being grounded.

The result being that, when the output of the amplifier reaches zero, the signal at the output lead of the comparator, and therefore at the gate of the MOSFET, causes the MOSFET to conduct, clamping the output of the operational amplifier at a zero voltage level, thus providing initialization of the timing cycle.

3,836,792
FOUR STAGE STORAGE ENHANCED LOGIC CIRCUIT

John P. Eckert, Jr., Gladwyne, and Robert M. Bucks, Norristown, both of Pa., assignors to Sperry Rand Corporation, New York, N.Y.

Continuation of Ser. No. 842,276, July 16, 1969, abandoned.
This application Oct. 6, 1971, Ser. No. 187,035
Int. Cl. H03k 17/00
U.S. Cl. 307—300 15 Claims



There is disclosed herein a four stage circuit which utilizes charge storage in a transistor together with its inverse Beta to obtain fast switching. A diode anti-saturation clamp is also utilized in one of the stages to enhance rapid switching. The circuit is designed such that it is suitable for integration in a monolithic semiconductor device.

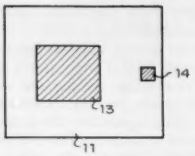
3,836,793
PHOTON ISOLATOR WITH IMPROVED PHOTODETECTOR TRANSISTOR STAGE

Roland H. Haitz, Portola Valley; Paul G. Sedlewicz, Menlo Park; Keith A. Stirrup, Los Altos; David F. Hilbiber, Los Altos Hills, and Robert W. Teichner, Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 225,896, Feb. 14, 1972, abandoned.
This application Oct. 19, 1973, Ser. No. 408,033
Int. Cl. H03k 3/26, 3/42
U.S. Cl. 307—303 4 Claims

A photon isolator device wherein the photon emitter and photodetector are matched such that the photodetector and transistor unit can be fabricated utilizing standard integrated circuit monolithic isolation techniques resulting in a high efficiency, high speed photon isolator; one preferred emitter util-

izes $GaAs_{(1-x)}P_x$ with x ranging from .20 to .48. A special technique is employed to provide a buried layer under the photodetector region that increases the collection layer depth. The elements in the integrated circuit transistor gain stage are



formed so as to provide temperature compensation to balance the temperature dependence of the emitted light of the photon isolator. A novel plastic film insulation is utilized to mount and space the emitter and the photodetector elements of the photon isolator.

3,836,794

PIEZOELECTRIC TRANSFORMERS

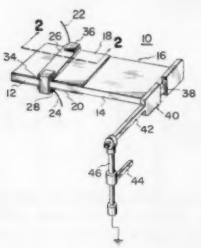
Masao Shimizu, Tokyo; Yasunoeu Sakurai, Kawasaki; Hideo Sato, Tokyo, and Keiji Inoue, Yokohama, all of Japan, assignors to Denki Onkyo Company Limited, Tokyo, Japan

Filed July 23, 1970, Ser. No. 57,462

Claims priority, application Japan, Sept. 9, 1969, 44-85304[U]; Sept. 9, 1969, 44-85305[U]; Sept. 9, 1969, 44-85306[U]; Sept. 9, 1969, 44-85308[U]; Aug. 1, 1969, 44-72864[U]

Int. Cl. H04r *17/00*

U.S. Cl. 310—9.7 **6 Claims**



In a piezoelectric transformer comprising an elongated ceramic body with one-half polarized in the direction of the thickness and the remaining half polarized in the longitudinal direction, a pair of input electrodes applied to the first half and an output electrode applied to the outer end of the second half, the input electrodes are comprised by electroconductive rubber covering substantially the entire surface of the first half and the output electrode is comprised by electroconductive rubber fitted over the outer end of the second half.

3,836,795

PARALLEL MULTIPLE CHANNEL DISPLAY SYSTEM

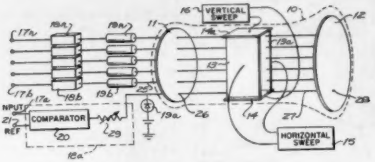
Stephen J. Halasz, Claremont, and Charles D. Winston, Glendora, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Continuation of Ser. No. 85,908, Nov. 2, 1970, abandoned. This application Apr. 2, 1973, Ser. No. 347,278

Int. Cl. H01j *29/50*

U.S. Cl. 315—13 C **7 Claims**

Visual signal information from multiple electronic signal channels are displayed simultaneously on the screen of a cathode ray tube by impressing each signal channel on the input of an individual electronic comparator which also has applied to it a reference wave-form. The signal of the channel interacting with the reference wave-form results in an output from the comparator in the form of pulses of varying width depending on the amplitude of the signal at each pulse of the wave-form. These output pulses are applied to a light emitting



diode whose output light pulses in response to the pulses impressed on the diode are focused on a photoemitter cathode of the cathode ray tube. Beam deflecting means within the tube produce lines visible on the screen so that pulse information from all the channels are observed visually and simultaneously.

3,836,796

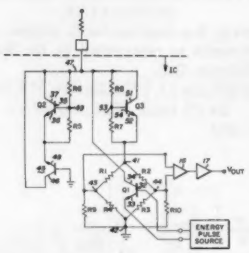
SEMICONDUCTOR PRESSURE TRANSDUCER EMPLOYING NOVEL TEMPERATURE COMPENSATION MEANS

James E. Solomon, Saratoga, and Arthur R. Zias, Palo Alto, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sept. 24, 1973, Ser. No. 400,355

Int. Cl. H03k *23/22, 23/08*

U.S. Cl. 307—310 **3 Claims**



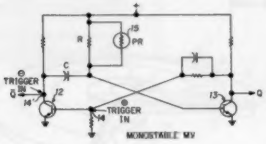
A semiconductor pressure transducer having a cavity with one thin wall diaphragm on which a piezoresistive bridge is formed of four resistors diffused into the thin wall semiconductor diaphragm and coupled together as a Wheatstone bridge, a voltage regulator including a zener diode coupled to the bridge, and a pair of nV_{BE} circuits coupled to the bridge and the regulator circuit for temperature compensation of the bridge and regulators over the operating temperature range, each of said nV_{BE} circuits comprising a transistor and two associated resistors connected so as to provide an irrational number of V_{BE} voltage drops for temperature compensation.

3,836,797

AUTOMATIC INTENSITY CONTROL FOR ELECTRONIC DISPLAYS

Carl E. Steen, Cedar Rapids, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed Oct. 29, 1973, Ser. No. 410,587
Int. Cl. H03k 17/00
U.S. Cl. 307—311 7 Claims



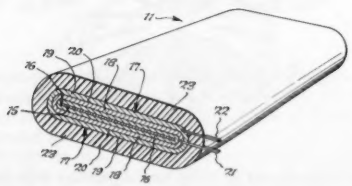
A pulsed waveform generation means with duty-cycle a function of ambient light intensity utilizes multivibrator means including a photo resistor to vary coupling time constant such that on-time half-cycle durations vary with ambient light. The waveform is usable in conjunction with bi-level logic means to apply power on a variable duty-cycle pulsed bias to indicator or annunciator lamps.

3,836,798

DEVICE FOR CONVERTING NUCLEAR ENERGY INTO ELECTRICAL ENERGY

Wilson Greatbatch, Clarence, N.Y., assignor to Wilson Greatbatch, Ltd., Clarence, N.Y.

Continuation of Ser. No. 36,182, May 11, 1970, abandoned. This application Aug. 15, 1972, Ser. No. 280,844
Int. Cl. G21d 7/00
U.S. Cl. 310—3 B 3 Claims



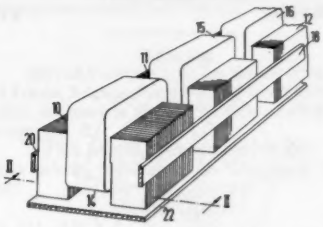
A device for converting nuclear energy into electrical energy comprising a radioactive nuclide, preferably a core of lithium enveloped by a coating of lithium hydride, an energy converting material enveloping the nuclide, and a pair of terminals connected in the converting material. The converting material preferably comprises silicon having diffused therein impurities of p-type and n-type material thereby defining opposite conductivity regions separated by a junction. The terminals are connected to corresponding ones of the regions, and electron-hole pairs are created in the regions upon bombardment by beta particles from the nuclide thereby creating a flow of current across the junction and an electrical potential across the terminals. The device advantageously can be utilized in conjunction with an artificial cardiac pacemaker whereby the stimulating pacemaker output pulses are generated at a non-linear rate.

3,836,799

LINEAR INDUCTION MOTOR WITH ELECTROMAGNETIC LEVITATION

John Frederick Eastham, 6 Cumbrae Gardens, and Eric Roberts Laithwaite, 'The Circles', Wentworth Close, both of Ditton Hill, Long Ditton, Surrey, England

Filed May 14, 1973, Ser. No. 359,874
Claim priority, application Great Britain, May 25, 1972, 24746/72
Int. Cl. H02k 41/04
U.S. Cl. 310—13 9 Claims



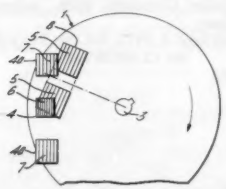
In a combined electromagnetic levitation arrangement and linear induction motor, the secondary consists of a sheet of electrically conductive non-magnetic material. The primary consists of a core of magnetic material providing paths for working flux in planes perpendicular to the desired direction of relative movement between the primary and the secondary, and polyphase windings on the core.

3,836,800

IGNITION SYTEM FOR INTERNAL-COMBUSTION-MICRO-ENGINES

Giacomo Bonvicini, Poviglio, Italy, assignor to Fox Motori di CECI Napoleone & C.s.a.s., Poviglio, Italy

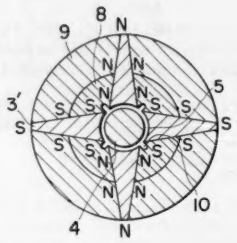
Filed May 1, 1973, Ser. No. 356,088
Int. Cl. H02k 17/42
U.S. Cl. 310—70 A 4 Claims



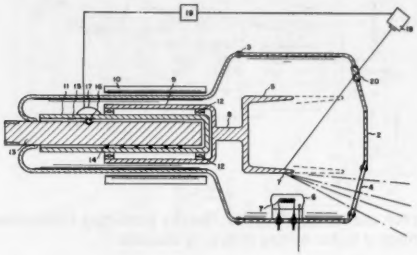
An ignition system for internal-combustion micro-engines comprising an ignition magneto provided to energize a spark plug by means of an electric current fed through a contact breaker controlled by a cam and designed to become operative in conditions of maximum current, characterized by the fact that said magneto is so shaped and dimensioned as to be comprised within the engine clearance gauge, the inductor of said magneto being mounted into a housing defined between the blades of the engine fan which is fixed on the driving shaft, said inductor having its pole shoes set at a right angle to the rotation axis of the driving shaft, while the armature comprises a three leg core, where said legs are parallel to the said rotation axis and are simmetric with respect of a plane passing through said rotation axis, said armature core being constituted of a laminated iron structure, wherein the central leg which supports the primary and secondary winding, has a thickness smaller than that of the side legs which are identic, while the outer surfaces of said three legs are coplanar, the inductor being constituted of a two leg core, wherein the transverse centre plane passes through the axis or the fan rotor sup-

porting said inductor, while the thickness of the inductor core legs is greater than that of the core legs of the armature so as to obtain towards the rotation axis of the ignition system a zone of electromagnetic leakage in order to produce a flattening of the peaks of the current curve.

3,836,801
STATOR FOR DC MACHINES
Seizi Yamashita, and Kazuo Onishi, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 7, 1973, Ser. No. 338,939
Int. Cl. H02k *23/04*
U.S. Cl. 310—154 **6 Claims**


8
N
9
N
N
N

that the focal spot traverses a spiral path as the anode rotates and moves axially. The axial displacement of the anode can be



controlled by the temperature of the focal spot, i.e. by measuring the light emitted from the focal spot area.

3,836,806

LUMINESCENCE DISPLAY TUBE BASE PLATE COMPRISING PROTRUSIONS EXTENDED SIDEWAYS BEYOND GRID SUPPORTS

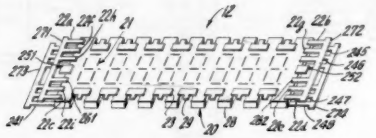
Masaki Kobayakawa; Kazufumi Yawata, and Shigeru Yamashita, all of Kagoshima, Japan, assignors to Nippon Electric Kagoshima, Limited, Kagoshima, Japan

Filed Sept. 17, 1973, Ser. No. 397,796

Claims priority, application Japan, Sept. 20, 1972, 47-110000; Nov. 7, 1972, 47-128749

Int. Cl. H01j *1/92, 1/94*

U.S. Cl. 313—108 R **4 Claims**



In a base plate assembly including an insulative substrate for a luminescence display tube and grid supports formed on the substrate along side edges thereof, a plurality of protrusions are extended sideways from the body of the substrate beyond the grid supports. When each of the grid supports has a protrusion left after cutting of the supports from two frames, the protrusions of the substrate are extended beyond the protrusions of the grid supports.

3,836,807

ROTARY ANODE FOR X-RAY TUBES

Horst Schreiner, Nurnberg; Ernst Geldner, Rosstal, and Helmut Dietz, Nurnberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

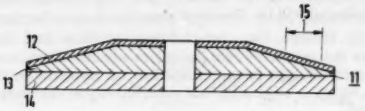
Filed Mar. 1, 1973, Ser. No. 336,963

Claims priority, application Germany, Mar. 13, 1972, 2212058

Int. Cl. H01j *35/10*

U.S. Cl. 313—330 **8 Claims**

An x-ray tube anode of the rotary type has a target surface formed by a thin layer of tungsten/rhenium alloy, supported by laminates comprising first a tungsten alloy lamination comprising at least 70 percent tungsten by weight and behind this a molybdenum alloy lamination, the anode being made by powdered metal technology so the three components are integrated with a porosity of low value. The target surface is re-



sistant to roughening and the anode is substantially free from the development of cracks even when heavily loaded.

3,836,808

ROTARY ANODE FOR AN X-RAY TUBE

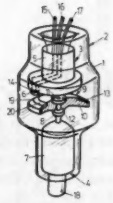
Rudolf Friedel, Erlangen, Germany, and Bernd Natter, Reutte, Austria, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed June 12, 1973, Ser. No. 369,395

Claims priority, application Germany, June 28, 1972, 2231687

Int. Cl. H01j *35/08*

U.S. Cl. 313—330 **3 Claims**



A rotary anode of an X-ray tube delivers X-rays from at least the surface struck by electrons and consisting mostly of molybdenum. According to the present invention at least the struck location consists of substantially 75 percent molybdenum and up to 25 percent of a metal having an atomic number of 39 to 46.

3,836,809

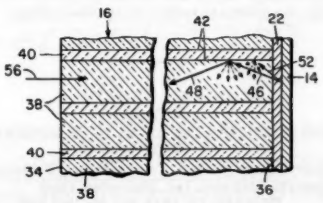
FIBER OPTIC PLATE WITH DENSE OPAL GLASS CLADDING

Edward U. Condon, Boulder, Colo., assignor to Corning Glass Works, Corning, N.Y.

Filed July 19, 1971, Ser. No. 163,721

Int. Cl. H01j *29/12;* **G02b** *5/16;* **C03c** *13/00*

U.S. Cl. 313—465 **8 Claims**



An image storage device is disclosed which consists of a multiplicity of light conducting fibers secured together in side-by-side relation to form a fiber optic plate. Each of the fibers comprises a photochromic glass core and a layer of dense opal glass disposed on the surface of the core, the index of refrac-

tion of the opal glass being lower than that of the core. In image storage devices of this type light which is incident on the core-cladding interface at an angle less than the critical angle passes into the cladding and may darken adjacent photochromic fibers. The opal glass functions to scatter light passing through the core-cladding interface and thereby reduce the amount of light leaking to adjacent fibers, some of the scattered light being returned to the photochromic core from which it originated and contributing to the darkening thereof.

3,836,810

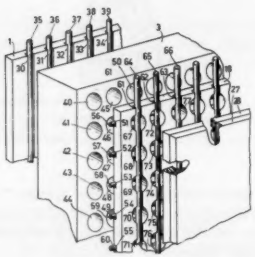
PICTURE DISPLAY DEVICE COMPRISING A PLURALITY OF LIGHT PRODUCING ELEMENTS

Johannes Hendricus Maria Johanns; Thijs Johannes De Boer; Edward Fokko De Haan; Zeger Van Gelder, and Mathieu Martinus Maria Petrus Mattheij, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.

Continuation of Ser. No. 173,482, Aug. 20, 1971, abandoned. This application July 12, 1973, Ser. No. 378,590

Int. Cl. H01j *61/42*

U.S. Cl. 313—484 **4 Claims**



A gas-discharge picture-display panel comprising a plurality of gas-discharge tubes. The gas-discharge tubes are closed on one side by a window. An electrode is arranged at each end of each gas-discharge tube. The length of the gas-discharge tubes is at least twice the dimension normal to the directions of length and the wall of the tube is coated with a phosphor material. A positive column is formed in the gas-discharge tubes and the ultra-violet radiation produced thereby causes the phosphor to luminesce. A device which reduces the ignition voltage of the positive column is connected in series with the gas-discharge tubes. The device produces either a glow discharge or a plasma to reduce the ignition voltage.

3,836,811

MEANS FOR REDUCING EFFECTS OF DIFFERENTIAL CUTOFF

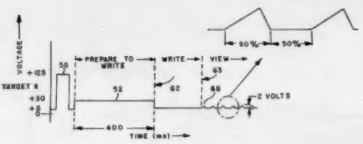
John Durecka, and Philip S. Crosby, both of Beaverton, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed May 17, 1973, Ser. No. 361,089

Int. Cl. H01j *29/70*

U.S. Cl. 315—12 **6 Claims**

A half-tone storage tube is disclosed which, after a storage target has been electrically prepared, has information written on such storage target in a writing mode, said storage target is subjected to a small amplitude alternating voltage means while in a reading mode, thereby minimizing the effects of differential cutoff so that the image produced on the storage tube



screen can easily be viewed, thereby permitting information written at higher writing rates to be viewable.

3,836,812

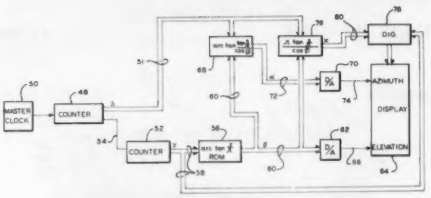
DISPLAY OF DIGITALLY STORED IMAGE ON A SPHERICAL VIEWING SURFACE

William S. Bennett, Chenango Bridge, N.Y., assignor to The Singer Company, New York, N.Y.

Filed Jan. 22, 1973, Ser. No. 325,573

Int. Cl. H01j *29/70*

U.S. Cl. 315—18 **8 Claims**



In response to timing signals, a first read-only memory provides elevation signals to a display having a spherical viewing surface. The timing signals and the output of the first read only memory are additionally provided to a second and a third read only memory which respectively provide azimuth signals to the display and input signals to a digital image generator. In response to the elevation and azimuth signals, a beam provides a raster of great circles on the viewing surface. The timing signals are additionally provided to the digital image generator which provides to the display a representation of a stored image which is viewed in a desired perspective from an eyepoint.

3,836,813

POWER SUPPLY FOR USE WITH A DISPLAY SYSTEM

Derek Chambers, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.

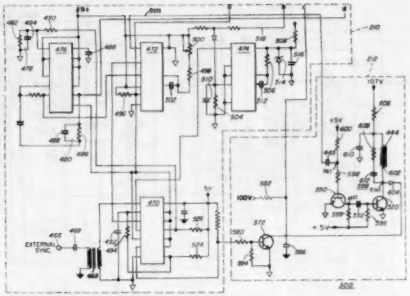
Continuation of Ser. No. 224,202, Feb. 7, 1972, abandoned. This application Sept. 14, 1973, Ser. No. 397,562

Int. Cl. H01j *29/70*

U.S. Cl. 315—18 **22 Claims**

A synchronized power supply for use with display systems and data processing equipment in general in which information is displayed on a screen such as a cathode ray tube in which the power supply is synchronized to the display such that internal synchronization is maintained regardless of varia-

tion in external synchronization. A unique converter arrangement transfers regulated power to the loads at high efficiency



such that both improved power supply and display operation result.

3,836,814

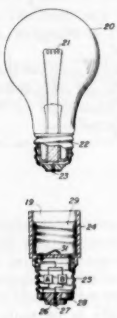
THREE-WAY LAMP CONVERTER

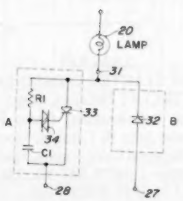
Edward T. Rodriquez, 16 Sargeant Rd., Winchester, Mass. 01890

Filed Dec. 22, 1972, Ser. No. 317,630

Int. Cl. H01j *7/44, 19/78*

U.S. Cl. 315—51 **2 Claims**





A conversion device is disclosed which adapts a three-way light fixture to the use of an ordinary electric bulb of the type having but a single filament. The device employs a pair of current controllers which can be activated separately or together by the three-way switch of the light fixture. Each controller governs the current flow to the filament during different half cycles of the full cycle of the impressed a.c. line voltage. One controller employs a trigger circuit to gate an SCR on at a predetermined phase of the a.c. wave whereby the SCR conducts current to the filament for a portion of a half wave to provide the lowest level of illumination. The other controller utilizes a diode to permit one half of the full wave alternating current to flow in the filament to provide an intermediate level of illumination. The highest level of illumination is obtained where the current controllers are activated together so that the diode conducts for one half of the a.c. cycle and the SCR conducts for a portion of the other half of the a.c. cycle.

3,836,815

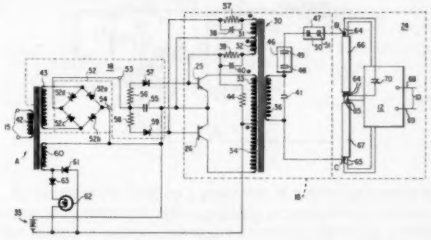
EMERGENCY INSTANT-START LIGHTING SYSTEM FOR ARC DISCHARGE DEVICES

Rollie R. Herzog, Danville, Ill., assignor to General Electric Company, Indianapolis, Ind.

Filed May 24, 1972, Ser. No. 256,252

Int. Cl. H02j *9/06*

U.S. Cl. 315—86 **11 Claims**



An emergency lighting system for at least one arc discharge device, utilizing an impedance mismatch between the emergency lighting system and a ballast provided for normal 60 Hz. power operation. This emergency lighting system will be activated when a normal AC voltage source falls below a predetermined level, and operates the arc discharge devices in an instant-start lighting system mode without the requirement for active switching between the normal and emergency modes of operation.

3,836,816

ARRANGEMENT FOR IGNITING AND SUPPLYING A GAS-AND/OR VAPOUR DISCHARGE LAMP

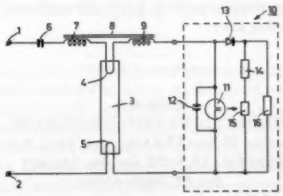
Cornelis Johannes Adrianus Gerardus Heck, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 1, 1972, Ser. No. 311,442

Claims priority, application Netherlands, Dec. 22, 1971, 7117622

Int. Cl. H05b *39/00, 41/08*

U.S. Cl. 315—94 **13 Claims**



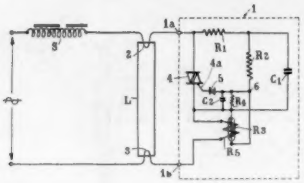
A supply circuit for a discharge lamp includes a glow starter tube and a photosensitive resistor in parallel across the preheated electrodes of the discharge lamp. The photo-resistor is exposed to the light from the starter tube whereby its im-

pedance drops sharply to increase the heating current of the lamp electrodes and thereby reduce the electrode warm up time. An inductor in series with the discharge lamp combines with the subsequent opening of the starter tube electrodes to generate a voltage ignition pulse for the discharge lamp.

3,836,817
TWO-POLE ELECTRONIC STARTER FOR FLUORESCENT LAMPS

Liang-Ing Tchang, Bourg la Reine, and Jean Dolezon, Puteaux, both of France, assignors to Compagnie des Lampes, Paris, France

Filed Jan. 10, 1973, Ser. No. 322,358
Int. Cl. H05b 41/04
U.S. Cl. 315—100 **13 Claims**



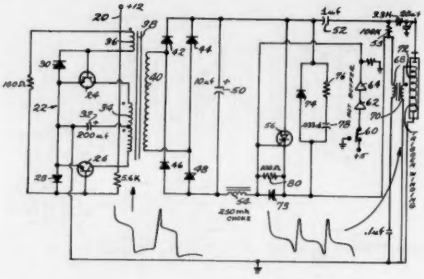
A two-pole electronic starter for use with a fluorescent lamp of the type having filament-like electrodes, for preheating the filament-like electrodes of the fluorescent lamp an thereafter for starting said lamp, said starter comprising a pair of terminals adapted to be electrically connected each to a respective one of the filaments of said fluorescent lamp in order to form with said filaments a series circuit adapted to be electrically connected in turn to a source of alternating current voltage, a bidirectional-conduction electronic switch having a control input and connected between said pair of terminals, and a threshold trigger circuit for delivering control pulses to said control input of said bidirectional-conduction electronic switch, said threshold trigger circuit comprising a threshold diode having one electrode connected to said control input of said electronic switch, a capacitor having one plate connected to the other electrode of said threshold diode, and a voltage divider connected in series across said pair of terminals and provided with an intermediate tap connected to the junction point between said threshold diode and said capacitor, said voltage divider comprising means for shifting the potential of said tap in such a direction that at each half-wave of the supply a.c. voltage, after a predetermined time period for which the voltage applied to the fluorescent lamp is normally sufficient for starting same, becomes lower than the threshold level of said threshold diode in order to keep said electronic switch in a non-conducting state.

3,836,818
STROBE LIGHT TRIGGER CIRCUIT

Robert E. Berglas, 30 East End Ave., New York, N.Y. 10028

Filed Feb. 22, 1973, Ser. No. 334,691
Int. Cl. H05b 41/14
U.S. Cl. 315—240 **12 Claims**

A fast recycling trigger circuit for firing a strobe light on a camera with the camera's own X-synchronization switch with an oscillator powered by the camera battery, a tank circuit consisting of a capacitor charged by the oscillator and an inductor, and an SCR which is rendered conductive by manually operating the X-synchronization switch to discharge the capacitor through a strobe light trigger winding until the overswing caused by the resonance of the tank circuit back biases

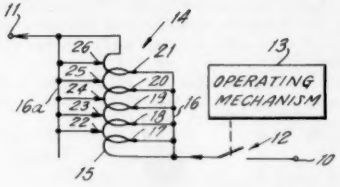


the SCR permitting the capacitor to thereafter rapidly recharge for another trigger.

3,836,819
CURRENT LIMITING CIRCUIT INTERRUPTER DEVICE

Challiss I. Clausing, Marlton, N.J., assignor to I-T-E Imperial Corporation, Spring House, Pa.

Filed Aug. 20, 1973, Ser. No. 390,064
Int. Cl. H02h 7/22
U.S. Cl. 317—11 C **17 Claims**



A helically wound coil is connected in series with a circuit interrupter and electrical contacts on diametrically opposite sides of each turn of the coil form direct current paths in parallel for each coil so that substantially no inductance is in the power circuit when the contacts are closed. The contacts are opened sequentially in response to a fault current to gradually introduce one or more turns of the coil in the series circuit in order to limit the rise of fault current before the series interrupter device is operated.

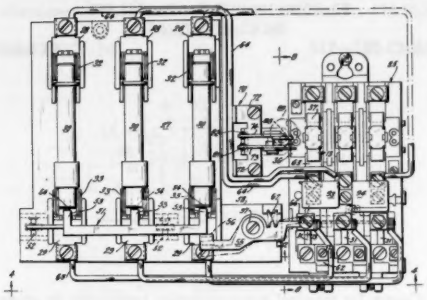
3,836,820
MANUAL MOTOR STARTER COMBINED WITH FUSED CIRCUIT PROTECTORS

Bernard Di Marco, Bellefontaine, Ohio; Frank W. Kussy, Haverford, Pa., and John B. Cataldo, Moorestown, N.J., assignors to I-T-E Imperial Corporation, Spring House, Pa.

Filed Mar. 1, 1973, Ser. No. 336,995
Int. Cl. H02h 7/08
U.S. Cl. 317—13 B **9 Claims**

A manual motor starter having interchangeable heaters for its overload sensing means is combined with fusible motor short-circuit protectors (MSCPs) to achieve electrical coordination in which the MSCPs provide protection against severe fault conditions and the overload sensing means of the manual motor starter provides protection against running overloads. The MSCPs act on a common trip bar mounted to operate a crank engageable with the common trip bar of the starter for automatic opening of the starter contacts in the event an MSCP blows. Each MSCP is electrically wired in se-

ries with one pole of the starter in a circuit position between the contacts and the heater of the overload sensing means, so



that the protector is not bypassed if heater burnout produces a phase-to-phase short.

3,836,821

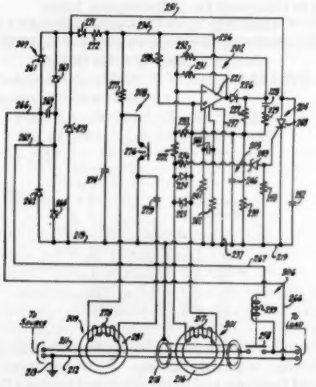
GROUND FAULT PROTECTIVE SYSTEM

Wallace W. Wahlgren, Oakland, and Ellwood S. Douglas, Orinda, both of Calif., assignors to The Rucker Company, Oakland, Calif.

Continuation-in-part of Ser. No. 141,297, May 7, 1971, abandoned. This application Mar. 12, 1973, Ser. No. 340,169

Int. Cl. H02h 3/16

U.S. Cl. 317—18 D **21 Claims**



Highly sensitive ground fault protective system utilizing an operational amplifier, integrator and switching means for interrupting the flow of current in a distribution system when the amplified and integrated signal produced by a fault current reaches a sharply defined threshold value. The system can be built in highly miniaturized, modular form which can be incorporated in small circuit breakers and receptacle outlet boxes.

3,836,822

CONTROL APPARATUS FOR TEMPORARILY REDUCING TURBINE TORQUE

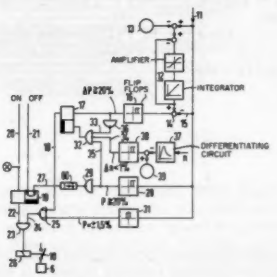
Peter Schonfeld, Essen; Heinz Borgmann, Muhlheim-Ruhr, and Gerhard Plohn, Bamberg, all of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Muhlheim-Ruhr, Germany

Filed Aug. 30, 1972, Ser. No. 284,865

Claims priority, application Germany, Mar. 22, 1972, 2213951

Int. Cl. H02p 9/04

U.S. Cl. 317—21 **13 Claims**



In the event the load on a generator of a turbo generator is temporarily removed, either partially or completely, the turbine setting or control valves are closed by providing a brief interruption of a power control device until the malfunctioning part of the system is disconnected and power is again called for by the system. This is accomplished by providing control apparatus which is operable in parallel to the power control device and which responds to load jumps exceeding predetermined and adjustable valves to interrupt the power control device and thereby close the turbine setting valves.

3,836,823

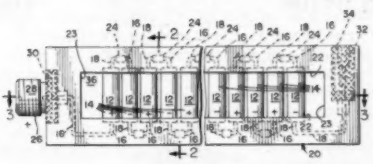
ELECTRICAL ASSEMBLY

Marvin L. Shields, Bloomington, Ind., assignor to Sarkes Tarzian, Inc., Bloomington, Ind.

Filed July 17, 1973, Ser. No. 380,008

Int. Cl. H01k 1/12

U.S. Cl. 317—100 **12 Claims**



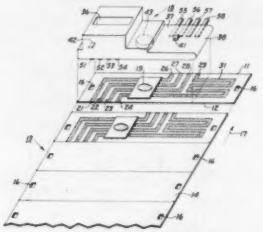
In combination one or more heat producing electrical components, each component having an elongated body and electrical connector leads extending from one or both opposite ends thereof; electrical insulating means provides a tubular conduit structure for containing a fluid heat exchange medium for cooling contact with the body of the electrical components, said conduit encapsulates and supports at least one end of the body of each electrical component body and also encapsulates and holds the electrical leads extending therefrom in secure electrically insulating arrangement with respect to other components, said conduit structure includes inner wall surfaces spaced apart from the exposed body surfaces of the electrical components except for short end portions encapsulated and supported thereby.

3,836,824

MOUNTING ARRANGEMENT FOR FLEXIBLE CIRCUIT

Donald L. Watrous, Liverpool, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 24, 1972, Ser. No. 299,657
Int. Cl. H05k 1/04
U.S. Cl. 317—101 F 14 Claims



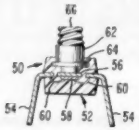
A flexible electrical circuit arrangement, comprising a strip-like member carrying circuitry thereon, is folded around the edge of a support member and attached thereto, resulting in a compact space-saving arrangement. In a preferred embodiment, the circuit is a sequential flashing circuit for sequentially firing a plurality of photoflash lamps, and the support member is an elongated shoulder of a socket for receiving an array of flash lamps. The flexible circuit is elongated and is provided with openings near the ends thereof, which openings engage with posts on opposite sides of the support member for attaching the folded circuit.

3,836,825

HEAT DISSIPATION FOR POWER INTEGRATED CIRCUIT DEVICES

William Bernard Hall, Stockton, and Joseph Allen Koskulitz, Raritan, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 6, 1972, Ser. No. 295,536
Int. Cl. H01l 1/12
U.S. Cl. 317—100 6 Claims



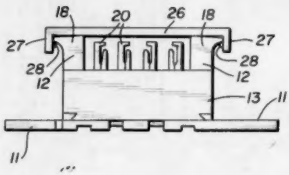
An integrated circuit chip having circuit elements capable of relatively high power operation is encapsulated in a body of polymeric material having the form of an elongated prism. Conductors are electrically coupled to the circuit elements in the chip and extend outwardly of the body through a relatively long side thereof. A heat conducting stud is anchored in the body and is thermally coupled to the chip. The stud extends outwardly of the package through another of its relatively long sides. A heat sink may be coupled to the stud outside of the package.

3,836,826

COVERS FOR TERMINAL BOXES

Kenneth W. Hotchkiss, Blue Mountain, and Gerald S. Byers, Coal Creek Canyon, both of Colo., assignors to Photo Production Plastics, Inc., Boulder, Colo.

Filed May 18, 1973, Ser. No. 361,590
Int. Cl. H01r 13/44
U.S. Cl. 317—122 4 Claims



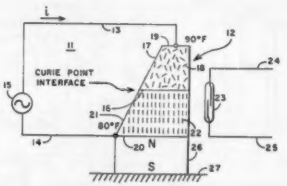
Covers for terminal boxes generally rectangular in shape used in telephone installation equipment, said covers being made of transparent plastic material, each comprising a flat top for contacting and covering the open face of a terminal box, integral side walls provided with inwardly projecting means for engaging outwardly extending side wall members on said terminal box, and means preventing longitudinal sliding movement of the cover relatively to the terminal box. Said sliding movement preventing means may be and extensions at opposite ends of the cover top at right angles thereto partially closing said box ends and also serving to prevent foreign matter from falling into the box, or may be a rib on the inner surface of the top extending onto the inner surface of the cover side wall for entering spaces between the side wall members of the terminal box. The cover occupies limited space sidewise of the terminal box and thus permits the covered boxes to be mounted adjacent each other on a wall or support with little space between them for manipulation of the covers.

3,836,827

CURIE POINT AMBIENT TEMPERATURE SENSOR

Kenneth J. Cuthbertson, Willowdale, Ontario, Canada, assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 1, 1973, Ser. No. 384,527
Claims priority, application Canada, Mar. 2, 1973, 162803
Int. Cl. H01h 37/58; G01k 7/00
U.S. Cl. 317—133 10 Claims



A thermoferrite thermostat is disclosed which includes a thermoferrite material having a temperature gradient established from one end to the other and having a Curie point temperature selected to fall between the extremes of said temperature gradient such that a Curie point interface is established which is defined as the dividing region between that portion of material which lies below said temperature and is therefore magnetic and a magnetic sensor which may be in form of a reed switch for sensing the position of said interface. Said temperature gradient may be established by either supplying current to a Curie point material having a non-uniform cross section or to a heater located at one end of a Curie point material.

3,836,828

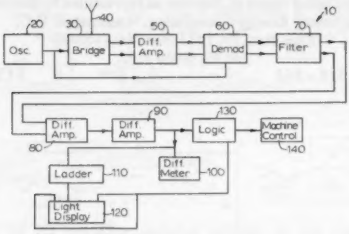
ELECTRONIC PROTECTION AND SENSING APPARATUS

Leon J. Siegel, Livingston, N.J., assignor to Weldotron Corporation, Piscataway, N.J.

Continuation-in-part of Ser. No. 273,692, June 21, 1972, abandoned. This application June 18, 1973, Ser. No. 370,783

Int. Cl. H01h 47/12

U.S. Cl. 317—146 11 Claims



The apparatus comprises an electronic system including an antenna positioned about the equipment to be protected and coupled to a resistor-capacitor bridge, to which is coupled an oscillator. The output of the bridge is coupled through a differential amplifier to a demodulator, and the output of the oscillator is also coupled directly to the demodulator, The demodulator output is coupled through an amplifying system both to a display device, which is used to indicate the state of balance of the system, and to a control circuit for generating a signal which is coupled to the equipment to be protected to turn it off or to otherwise exert a protective control action when a certain level of unbalance in the bridge occurs.

3,836,829

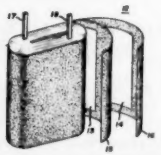
POLYOLEFIN FILM CONTAINING THEREIN WIDELY DISPERSED FINE PARTICLES OF A DIELECTRIC LIQUID SOLUBLE MATERIAL

John W. Eustance, Glens Falls, N.Y., assignor to General Electric Company, Hudson Falls, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,233

Int. Cl. H01g 1/00, 1/02; H02b 3/18

U.S. Cl. 317—258 9 Claims



Polyolefin resin has combined therewith, in a widely dispersed manner, discrete fine particles of a material which is readily soluble in a capacitor dielectric liquid impregnant. A capacitor grade dielectric film made from this resin includes the noted particles dispersed therein, so that when the film is impregnated, in a capacitor modification, the fine particles dissolve to pass the dielectric liquid impregnant throughout the film.

3,836,830

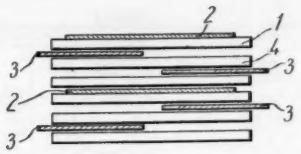
POWER CAPACITOR SECTION

Vladimir Amayakovich Akopian, ulitsa Komitasa, 33, kv. 33, and Jury Smbatovich Chatinian, ulitsa Tamaniana, 1, kv. 6, both of Erevan, U.S.S.R.

Filed Apr. 17, 1973, Ser. No. 352,028

Int. Cl. H01g 1/00

U.S. Cl. 317—261 5 Claims



A power capacitor section comprising three layers of a dielectric material and metal plates, characterized, according to the invention, in that one of the metal plates is a metal coating layer applied to the surface of one of the dielectric layers, while the other metal plate consists of two foil plates placed on the surface of the other non-metallized dielectric layer with the metal coating layer overlapping the foil plates.

3,836,831

PLURAL MOTOR TENSION CONTROLLED TAPE DRIVE

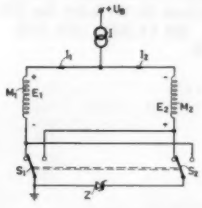
Teunis Robert Van Heelsbergen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 11, 1972, Ser. No. 288,109

Claims priority, application Netherlands, Sept. 25, 1971, 7113225

Int. Cl. B65h 59/38

U.S. Cl. 318—7 18 Claims



Arrangement intended in particular for driving a tape-shaped record carrier accommodated in a cassette, which arrangement is provided with two direct-current motors which each drive one reel. In the "fast forward" and "fast rewind" functions one end of each of the two motor windings is connected via a common impedance to one terminal of the supply source, the other end of the winding of the take-up motor being directly connected to the other terminal, whilst the other end of the winding of the take-off motor is connected to this other terminal of the supply source via a Zener diode. As a result the brake torque exerted by the take-off motor always is automatically regulated to a value such that the sum of the speeds of the two motors is constant. Consequently the tape tension produced is substantially independent of the friction produced. Also the time required for the "wind" functions is substantially constant.

3,836,832
RAPID-STOPPING SYSTEM FOR TRANSMISSIONS

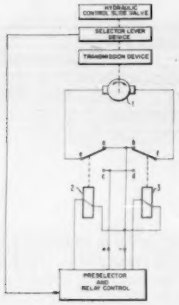
Arwed Von Koch, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Mar. 6, 1972, Ser. No. 232,176

Claims priority, application Germany, Mar. 8, 1971, 2110897

Int. Cl. H02p 3/12

U.S. Cl. 318—265 **6 Claims**



A rapid stopping installation for an electric range selector mechanism in an automatic transmission which includes a selector lever to be displaced into a position determined by a pre-selector; a permanent magnet motor is used for the drive of the pre-selector whereby the deenergization of the motor, when reaching the pre-selected lever position, is coupled with an immediate short-circuiting of the supply terminals of the motor to brake the same.

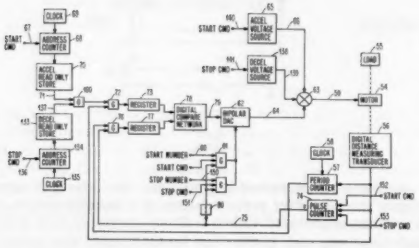
3,836,833
ADAPTIVE MOTOR ACCELERATION

John P. Harris; John P. Mantey, both of Boulder, Colo., and David R. Wood, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 28, 1973, Ser. No. 374,600

Int. Cl. H02p 1/04, 3/08

U.S. Cl. 318—270 **21 Claims**



A magnetic tape unit's DC capstan motor is closed-loop speed controlled from a rest position to a steady-state speed and is subsequently controlled from the steady-state speed to a rest position. The motor's acceleration and/or deceleration profile, during the acceleration and/or deceleration interval, is adaptively defined by a read-only-store, or memory. An address counter selects a unique command speed from the store at the occurrence of an output pulse from the motor's digital feedback tachometer. The address counter begins counting as soon as a motor start and/or stop command is received. In this manner, the addresses used during a given acceleration and/or deceleration interval are adaptively variable in accordance with the unique motor rest position from which acceleration begins, and/or the motor's unique position from which deceleration begins, as these positions relate to time-subsequent or adjacent digital tachometer pulses.

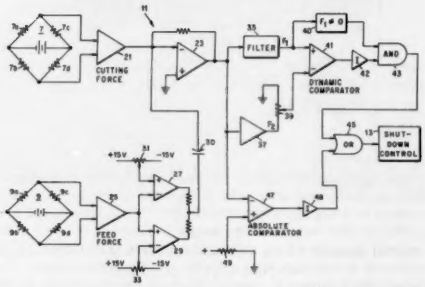
3,836,834
MACHINE PROTECTION SYSTEM

Leonard A. Abbatiello; Robert E. Hewgley, Jr., both of Oak Ridge, and Paul C. Turner, Knoxville, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Nov. 13, 1973, Ser. No. 415,460

Int. Cl. G05b 9/02

U.S. Cl. 318—563 **5 Claims**



A protection system has been provided for preventing damage to a numerically controlled machining device in the event of a wreck. The protection system consists of a strain-gage-instrumented tool holder or tool holder support; amplifying; filtering; and comparing circuitry; and quick acting machine shutdown circuitry. The instrumented tool holder senses the cutting and side forces by means of strain gages mounted on the tool holder. The system initiates a shutdown whenever (1) an instantaneous force exceeds a preselected maximum (absolute failure), or (2) an average force suddenly changes its level by a preselected factor (dynamic error). Although the system does not prevent a wreck, the effects of the wreck are restricted to limited part damage rather than damage to the machine.

3,836,835
MULTI AXES LINEAR MOVEMENT POSITIONING SYSTEM

Bruce A. Sawyer, 20120 Allentown Dr., Woodland Hills, Calif. 91364

Filed Apr. 19, 1971, Ser. No. 135,077

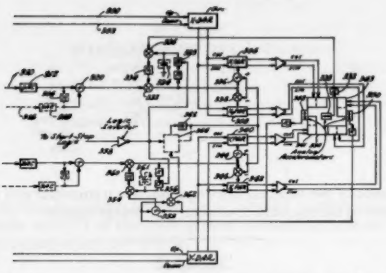
Int. Cl. G05b 19/40

U.S. Cl. 318—685 **25 Claims**

A synchronous motor having a movable member and a stationary member receives signals which apply a controllable power angle to the motor as measured between the actual displacement between the movable and stationary members and the input signals to the motor. The power angle is used to control the operation of the motor and may be produced by combining in a particular relationship input signals which may be provided with a periodic relationship. The motor may be a linear type of motor wherein a head is disposed in contiguous relationship to a platen and is movable along the platen on a single axis or a pair of coordinate axes.

A servo loop may also be provided for the synchronous motor. The servo loop receives signals representing a function of the actual displacement of the movable member relative to the stationary member. Such signals may represent the displacement, velocity or acceleration, or any combination of such

parameters, of the movable members relative to the stationary member. The signals produced by the servo loop control the power angle produced in the motor. When the signals represent velocity, the servo loop acts to damp the displacement of the movable member relative to the stationary member. When the signals represent displacement or acceleration, the servo loop acts to control on an optimal basis the displacement of the movable member relative to the stationary member.



3,836,836

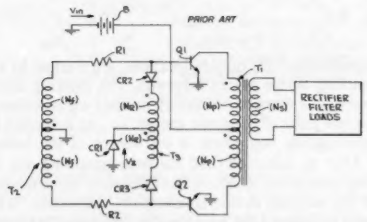
METHOD FOR NUCLEAR RADIATION HARDENING OF DC-TO-DC CONVERTERS

Philip M. Cowett, Jr., Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 16, 1973, Ser. No. 333,234

Int. Cl. H02m *3/32*

U.S. Cl. 321—44 **2 Claims**



A novel technique for nuclear radiation hardening DC-to-DC converters is disclosed, the technique being particularly applicable to battery powered DC-to-DC transistor converters of the common emitter type having the collector-emitter paths of two transistors connected together in a current loop including an output transformer, and having a base drive circuit including a feedback winding coupled to the base of each transistor to effect oscillation of the converter. Such circuits, when placed in a nuclear environment, suffer adverse affects, particularly as concerns transistor gain, saturation voltage drop, and regulator output. The adverse affects accompanying incident nuclear radiation can be compensated for and largely cancelled by the provision of a regulating secondary winding assembly electrically disposed across the respective bases of each of the two transistors, which secondary winding assembly is magnetically coupled to the output transformer and includes oppositely poled series diodes, and by further connecting a Zener reference diode between the electrical midpoint of the regulating winding assembly and ground.

3,836,837

PHASE CONVERTER

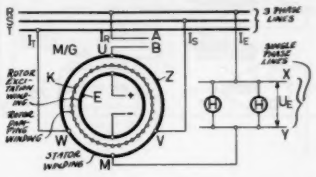
Paul Rauhut, Ennetbaden, Switzerland, assignor to Brown Boveri & Company Ltd., Baden, Switzerland

Filed May 10, 1973, Ser. No. 358,977

Claims priority, application Switzerland, May 12, 1972, 6926/72

Int. Cl. H02m *5/32; G05f 3/00*

U.S. Cl. 321—55 **41 Claims**



In the phase converter disclosed, a rotating machine has a stator winding connected at suitable terminals to a multiphase system with a plurality of lines and a single-phase system composed of one of the multiphase lines and a single-phase line. In the machine, a rotor in the form of a squirrel cage winding coacts with the stator voltages to produce unsymmetrical electromotive forces in the multiphase systems. An auxiliary voltage source having a continuously variable magnitude and phase, and connected between the line common to both systems and one of the terminals of the stator, compensates for the unsymmetrical electromotive forces.

3,836,838

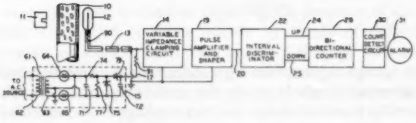
HIGH VOLTAGE POWER SUPPLY

John C. Homer, Willoughby, and John R. Stock, Fairview, both of Ohio, assignors to Stock Equipment Company, Cleveland, Ohio

Division of Ser. No. 140,519, May 5, 1971, Pat. No. 3,763,380. This application Dec. 4, 1972, Ser. No. 311,859

Int. Cl. G05f *3/14*

U.S. Cl. 323—7 **2 Claims**



A high voltage power supply having a clamping zener diode in series between a regulating zener diode and an output filter capacitor to clamp the capacitor to the peak voltage across the regulating zener diode. A bleeder resistor across the regulating zener diode provides a discharge path for the output capacitor through the zener impedance of the clamping zener diode when the supply is turned off.

3,836,839

CONTROLLED APPARATUS FOR SILICON CONTROLLED RECTIFIERS

Raymond Becky, McKeesport, Pa., assignor to TUC Industries, Inc., Hickory, Pa.

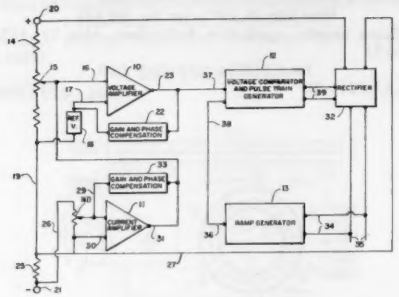
Filed Nov. 14, 1972, Ser. No. 306,193

Int. Cl. G05f *1/56*

U.S. Cl. 323—20 **2 Claims**

Control apparatus for controlled rectifier battery chargers and battery eliminators includes a reference voltage source, error amplifiers for voltage and current control, apparatus

comparing error voltage with a ramp voltage synchronized with the power line frequency, and apparatus triggered by the



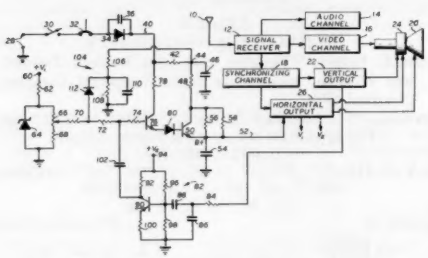
voltage comparator generating a train of gating pulses for silicon controlled rectifiers and the like.

3,836,840

VOLTAGE REGULATOR WITH SATURATION PROTECTION

Harry John Radloff, Williamsville, N.Y., assignor to GTE Sylvania Incorporated, Stanford, Conn.

Filed Aug. 14, 1973, Ser. No. 388,252
Int. Cl. G05f *1/56*
U.S. Cl. 323—22 T **8 Claims**



A voltage regulator having a series regulator transistor with a potential threshold device for preventing saturation. The potential threshold device includes a voltage divider and diode connected between the input electrode and a control device connected to the control electrode of the series regulator transistor whereby a control voltage applied to the control electrode is decreased when the potential difference between the input and control electrodes decreases below a threshold level. A pincushion correction waveform is also applied to the control electrode to modulate the regulated voltage with a pincushion correction signal.

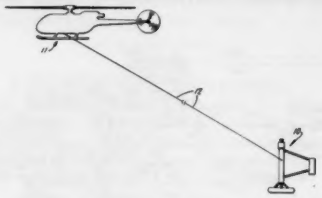
3,836,841

ELECTROMAGNETIC DEVICE FOR DETERMINING THE CONDUCTANCE OF A NEARBY BODY BY A SINGLE SUPERCOOLED INDUCTOR COIL

H. Frank Morrison, Berkeley, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Jan. 15, 1973, Ser. No. 323,782
Int. Cl. G01v *3/08, 3/16*
U.S. Cl. 324—5 **7 Claims**

A towed electromagnetic prospecting device has a single inductor coil used for both transmitting and receiving secondary electromagnetic radiation from the ground which has been induced by the transmitted radiation. Such secondary fields from the ground are sensed as a change in the effective resistance of the superconducting inductive transmitter coil employed in the resonant resistance type bridge circuit.

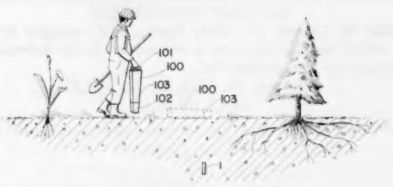


3,836,842

ENCAPSULATED ELECTRICALLY RESONANT CIRCUIT AND INTERROGATING APPARATUS AND METHOD FOR FINDING SAME IN VARIOUS LOCATIONS

Detlef Zimmermann, Ottawa, Ontario, and James Hugh Lougheed, Kanata, Ontario, both of Canada, assignors to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada

Filed Jan. 22, 1973, Ser. No. 325,518
Int. Cl. G01v *33/00*
U.S. Cl. 324—34 R **5 Claims**



Locations, typically outside locations, are marked by a passive marking device placed therewith. The marking device is responsive in a damped oscillatory manner when radiated by at least one pulse of magnetic energy, i.e., an induction field. An interrogating instrument is the source of the induction field. After an induction field has been generated, the interrogating instrument monitors the frequency spectrum within which the marking device is resonantly responsive. When a response is detected the interrogating instrument provides an indication of the response. The marking device is particularly useful for marking locations which are buried or are from time to time concealed. With a portable interrogating instrument, an operator, traversing the general area of a location, is thus able to find the location without the aid of a visible stake or other similar fixture.

3,836,843

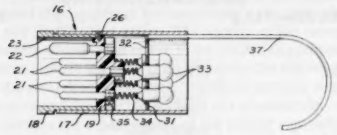
ELECTRIC CIRCUIT TESTER CONNECTOR FOR HIGHWAY VEHICLES

Everett R. Yonce, 259 E. 12th St., Oakland, Calif. 94606

Continuation of Ser. No. 192,445, Oct. 26, 1971, abandoned.
This application Apr. 9, 1973, Ser. No. 349,261
Int. Cl. G01r *31/02*; H01r *3/06*
U.S. Cl. 324—51 **4 Claims**

A test connector is provided for checking electrical circuits between a truck and a towed trailer, or between two sections of a semi-trailer highway vehicle. The test connector includes a cylindrical body enclosing a configuration of small indicator lamp bulbs visible through one end thereof. Electrical prongs may be plugged into a mating electrical connector for

coupling each of the lamps into a corresponding electrical circuit to be tested. A hook of electrically conductive material extends from the test connector to provide (1) a means for



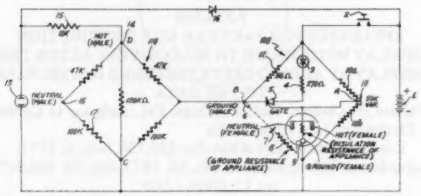
supporting the connector to a frame member or other part of a vehicle, and (2) an electrical ground connection between the test connector and the vehicle.

3,836,844

SAFETY TESTER FOR ELECTRICAL APPLIANCES AND RECEPTACLES

Richard W. Prugh, 24 Ivy Ln., Glen Mills, Pa. 19342

Filed May 17, 1973, Ser. No. 361,125
Int. Cl. G01r *31/02, 19/14*
U.S. Cl. 324—51 **10 Claims**



A simple, portable, handy tester for simultaneously testing electrical appliances to assure that the grounding system has continuity and to insure that power wiring is adequately insulated from exposed metal parts. The device may also be used to insure that receptacles for appliances are properly wired.

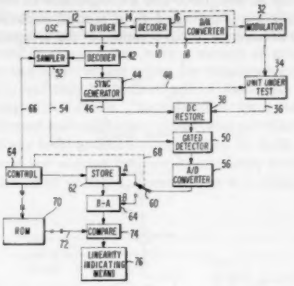
3,836,845

APPARATUS FOR TESTING THE LINEARITY OF A CIRCUIT BY USING RATIO DETERMINING MEANS

Michael Ian Payne, Dunellen, and James Dimitri Mazgy, Parsippany, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 3, 1973, Ser. No. 385,299
Int. Cl. G01r *27/00*
U.S. Cl. 324—57 PS **13 Claims**

Apparatus for testing the linearity of a circuit includes means for applying a staircase waveform to the circuit under test. The staircase waveform has known ratios between the values of one step and the remaining steps. The staircase waveform as altered by the circuit under test has unknown ratios between the one altered step and the remaining altered steps. Means are provided for determining the ratios of the one step to the remaining steps of the altered staircase waveform and for comparing these ratios to the known ratios existing in the original waveform. The difference between these ratios, if any, is determined and provides by way of a



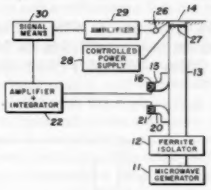
ratio comparator an indication of the linearity of the circuit under test.

3,836,846

ICE DETECTION APPARATUS EMPLOYING MICROWAVE REFLECTANCE

Wilson W. Overall, Warson Woods, Mo., and Joseph G. deKoning, San Jose, Calif., assignors to Monsanto Company, St. Louis, Mo.

Filed Sept. 9, 1971, Ser. No. 178,871
Int. Cl. G01r *27/04*
U.S. Cl. 324—58.5 B **2 Claims**



Apparatus and method for detecting the presence of ice or water on a road or other surface by means of reflected microwaves wherein microwave energy is directed through a window installed in the surface to be monitored and the condition of the surface is indicated by the level of microwave energy reflected.

3,836,847

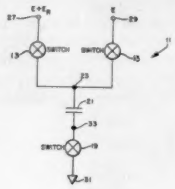
CIRCUIT FOR MEASURING AN UNKNOWN RESISTANCE BY USING A VOLTAGE RATIO

Paul G. Lucas, Sudbury, Mass., assignor to Gordon Engineering Company, Wakefield, Mass.

Division of Ser. No. 207,440, Dec. 13, 1971, Pat. No. 3,750,146. This application Mar. 22, 1973, Ser. No. 343,632
Int. Cl. G01r *27/02*
U.S. Cl. 324—62 **15 Claims**

A reference source is AC coupled to a converter for selectively providing both positive and negative reference signals to the converter. A reference signal potential is selectively applied to a first side of a first capacitor via a sequence of switches and a second side of the first capacitor is selectively connected to a common signal through a return switch. A first signal is presented at the second side of the first capacitor when a first switch of the sequence of switches and the return switch are closed. A second signal is presented at the second side of the first capacitor when the first and return switches are opened and a second switch of the sequence of switches is

closed. The second signal presented at the second side of the first is the reference signal having a given polarity with respect to the common signal. Automatic zeroing of an offset voltage generated by an integrator and a comparator of the analog to digital converter is provided by a second capacitor serially connected between an input terminal of the integrator and the



common signal, the integrator and comparator being connected in a closed loop configuration. A voltage ratio measurement by the analog to digital converter, the ratio of the voltage across a first resistor having a known resistance to the voltage across a second resistor having an unknown resistance, represents the resistance value of the second resistor.

3,836,848

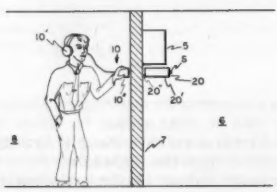
METHOD OF TRANSLATING THE LOCATION OF A PREDETERMINED POSITION ON ONE SIDE OF A SUBSTANTIALLY NONFERROUS STRUCTURAL BARRIER OF A BUILDING TO AN OPPOSITE SIDE OF SAID BARRIER

Maurice E. Blevins, 98 Canterbury Rd., Spartanburg, S.C. 29302

Division of Ser. No. 1,100, Jan. 7, 1970, Pat. No. 3,704,413. This application Nov. 1, 1972, Ser. No. 302,666

Int. Cl. G01m *27/00;* **G01r** *19/16, 33/00*

U.S. Cl. 324—67 **8 Claims**



A device for locating objects through a substantially nonferrous barrier, the use of which may also be applied for determining the thickness transmitter such a barrier and for localized surveying. An audio oscillator serves as a transmitter which emits signals that are picked up by headphones connected to a resonant tuned circuit. The transmitter is placed on or adjacent an object to be located and is set to transmit. Signals from the transmitter may then be located by the headphones and the peak sound from the signal or a null in the signal may be detected to pinpoint the position of the transmitter on the opposite side of the barrier. Whether or not the peak sound or the null is detected depends upon the attitude of the tranmitter coil with respect to the receiver coil. For measuring thickness of a particular barrier, the transmitter is located as stated above after which a null circle is detected radially out from the point where the tranmiter was located. The distance between the point of location of the transmitter and the null circle is a function of the thickness of the barrier. Alternatively, the null circle diameter may be detected and used to determine barrier thickness.

3,836,849

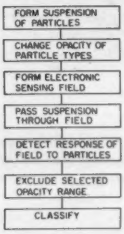
METHOD FOR CLASSIFYING PARTICLES

Wallace H. Coulter, Miami Springs, Fla., Marylou Ingram, La Canada, Calif., and Patrick Vincent Ferro, Miami Lakes, Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Oct. 14, 1971, Ser. No. 189,105

Int. Cl. G01r *27/04, 27/00*

U.S. Cl. 324—71 CP **22 Claims**


FORM SUSPENSION OF PARTICLES
CHANGE OPACITY OF PARTICLE TYPES
FORM ELECTRONIC SENSING FIELD
PASS SUSPENSION THROUGH FIELD
DETECT RESPONSE OF FIELD TO PARTICLES
EXCLUDE SELECTED OPACITY RANGE
CLASSIFY

To enhance the selectivity of the electronic classification of particles which are to be sensed in an electronic field which includes a high frequency energization and which thereby employs the electronic opacity of the particles as a basis for their classification, the particles are treated, for example, by a lysing agent, which selectively causes the opacity of certain types of the particles to change; whereby, each distinctive type of particle acquires a distinctive opacity range that is subject to electronic detection. Further selectivity can be obtained by electronically excluding after the treatment and before classification any undesired opacity range.

3,836,850

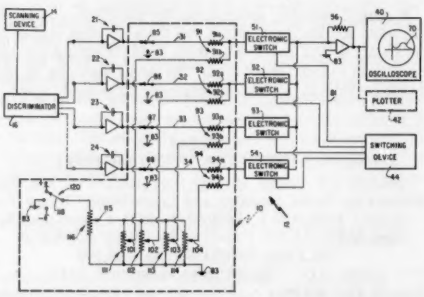
APPARATUS FOR PARTICLE SIZE DISTRIBUTION DISPLAY WITH MEANS TO SELECTIVELY ALTER THE DISPLAY BY ADDING PREDETERMINED D.C. SIGNALS TO THE DATA

Wallace H. Coulter, Miami Springs, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Continuation-in-part of Ser. No. 195,730, Nov. 4, 1971, abandoned. This application Oct. 16, 1973, Ser. No. 406,917

Int. Cl. G01n *27/00*

U.S. Cl. 324—71 CP **10 Claims**



The system includes a plurality of potentiometers and summing networks and a switching mechanism for alternately connecting the potentiometers to a neutral position, to a negative voltage source or to a positive voltage source. Each potentiometer is connected through a switch and one of the summing networks to the output of an accumulator in a particle size analyzing device and is adapted to add or subtract a signal to or from the accumulator output signal or, when the

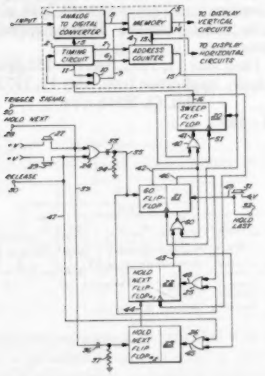
switching mechanism is in the neutral position, to have no effect upon the accumulator output signal. Each accumulator accumulates pulses generated by particles within a particular size range and the accumulator output signal is indicative of the quantity of particles in that size range. The particle analyzing device includes an electronic switching device for sequentially and cyclically connecting the outputs of the accumulators to a visual display device for presenting a visual display of a particle size distribution curve. The system of the invention permits the size distribution curve to be altered to compensate for erroneous signals (noise). It also permits the showing of a graph of the deviation between a standard particle size distribution curve and the sample particle size distribution curve. It further permits the replacement of the output signal from a selected accumulator with a desired D.C. signal level.

3,836,851

DIGITAL OSCILLOSCOPE CONTROL APPARATUS

Robert W. Schumann, Madison, Minn., assignor to Nicolet Instrument Corporation, Madison, Wis.

Filed Mar. 8, 1973, Ser. No. 339,180
Int. Cl. G01r *1/00, 19/00, 13/32*
U.S. Cl. 324—112 **14 Claims**



A digital oscilloscope having improved control apparatus which comprises first means for providing a single signal to control apparatus which will arm the oscilloscope to receive and hold only the next properly triggered input signal; second means for providing a single signal to the control apparatus which will then control the oscilloscope to hold the last properly measured signal and not to receive any further signals for measurement; and third means for providing a single signal to the control apparatus for placing the oscilloscope into a normal mode of operation. All of the first, second or third means may be manually or remotely operated.

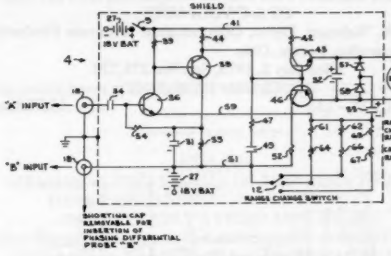
3,836,852

SOLID-STATE HIGH INPUT IMPEDANCE METER SYSTEM

Hugh C. Ross, 11915 Shadybrook Ct., Saratoga, Calif.

Filed May 3, 1968, Ser. No. 726,452
Int. Cl. G01r *1/30, 15/08, 5/22*
U.S. Cl. 324—123 R **24 Claims**

Presented is a system, including apparatus and methods of operation thereof, for effecting isolated measurement and sensing of line to ground voltages, differential voltages, currents, insulation leakage and resistances, Corona levels, and other parameters in insulated conductors and related systems associated with low and high power, low and high voltage electrical and electronic systems. The system includes a high input impedance meter unit actuated by a solid-state amplifier circuit including a pair of feedback circuits that cooperate with transistor amplifiers to maintain substantially constant the ratio of input and output from the circuit over a wide range of AC and DC voltages and currents. In its different applications, the high input impedance meter including solid-state amplifier circuit is used in conjunction with a variety of probes, both low voltage and high voltage types, for measurements of various voltages, and may be utilized with a proximity probe for direct sensing of AC fields. The high input impedance of the meter movement and solid-state circuit also permits the use of Corona voltage level and detecting probes for both high voltage direct and low voltage indirect or proximity measurement of various levels of voltages. Inasmuch as it is important that



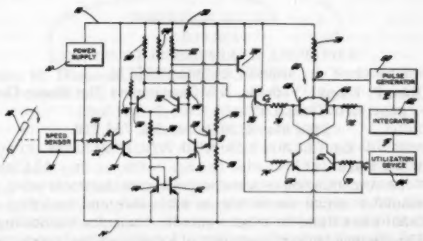
systems of this type be predictably accurate and operative, the system also includes a high voltage portable test unit to test the voltmeter and probes. To insure complete reliability of values being measured, the high voltage portable test source itself is subject to test to determine that it is operating properly before it is used to test the voltmeter and probes, and for this purpose a high voltage megohmmeter insulation leakage current-emission detector is provided to test the high voltage portable test voltage source, and to measure the high voltage insulation associated with the high voltage point or terminal being measured. Inasmuch as the high input impedance metering system is used in conjunction with high voltages, a collapsible and detachable insulating "hot stick" is provided to isolate the high voltage components from human contact while in use.

3,836,853

APPARATUS FOR MEASURING THE SPEED OF A MOVING MEMBER

Larry F. Cracraft; Richard C. Oppmann, and Edward G. Whitaker, all of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 10, 1973, Ser. No. 404,987
Int. Cl. G01p *3/48*
U.S. Cl. 324—166 **2 Claims**



A pair of complementary bilevel signals are cyclically produced at a frequency proportional to the speed of a moving

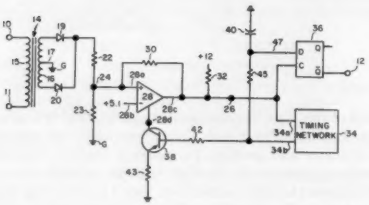
member. The bilevel signals are derived through at least a pair of junction transistors for delaying either the rise or the fall of the bilevel signals due to the minority carrier storage effect in at least the pair of transistors. Successive trigger pulses are each developed in response to the resulting overlap between the complementary bilevel signals during level transitions. Successive incremental pulses of constant width and constant amplitude are produced in response to the trigger pulses. The incremental pulses are integrated to provide an analog signal which is substantially constant at a level proportional to the speed of the moving member.

3,836,854

ALARM CIRCUIT FOR MONITORING THE AMPLITUDE OF A-C VOLTAGES

Alan W. Wehman, Elyria, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

Filed July 2, 1973, Ser. No. 375,730
Int. Cl. G01r *19/16, 31/02*
U.S. Cl. 324—133 **13 Claims**



A circuit for rapidly and accurately indicating whether an a-c voltage has a magnitude greater than a predetermined minimum value. A two-state voltage comparing circuit establishes a first output voltage when the rectified a-c input voltage exceeds a preset reference voltage and establishes a second output voltage state when the rectified a-c input voltage is less than that reference voltage. A two-state switching circuit forces the comparing circuit to assume and remain in its first state for a preset time after it assumes its second state, the preset time being greater than the time required for an acceptably high a-c voltage to pass through the reference voltage region established by the comparing circuit, as the a-c voltage varies through zero volts twice during each full cycle thereof. A two-state output control circuit indicates an a-c voltage fault if and when the comparing circuit returns to its second state within a relatively short time after having been forced to assume its first state. In this manner actual a-c voltage faults are distinguished from the apparent a-c voltage faults which tend to occur each time the a-c voltage varies through zero.

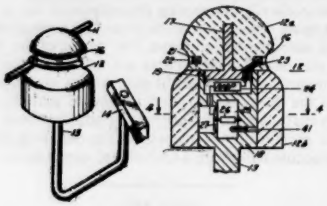
3,836,855

MODULATING SYSTEM

John F. Zaleski, Valhalla, N.Y., assignor to The Singer Company, New York, N.Y.

Filed May 5, 1958, Ser. No. 733,210
Int. Cl. G01s *9/56;* **H04b** *7/14;* **H02j** *13/00*
U.S. Cl. 325—113 **12 Claims**

10. A modulating system comprising, an electronic valve, an amplifier circuit connected to said valve and including an input circuit and an output circuit, means for connecting a signal voltage to said input circuit, a unidirectional conducting device connected in said output circuit serving the triple function of the power supply for said valve, the load across which the useful output voltage is developed, and a modulating element, and an antenna for concentrating incident electromagnetic wave energy upon said device and for reradiating a portion of the incident energy after modulation by said signal voltage.

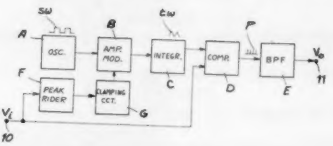


3,836,856

SYSTEM FOR LIMITING THE RANGE OF A-C SIGNALS

Armando Lovadina, and Franco Morelli, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed May 11, 1972, Ser. No. 252,466
Claims priority, application Italy, May 12, 1972, 24392/71
Int. Cl. H04b *1/04*
U.S. Cl. 325—187 **10 Claims**



A sinusoidal signal voltage of varying amplitude V_i is compared with a triangular voltage wave of relatively elevated frequency and amplitude to generate a binary voltage with a first value for signal amplitudes higher than the wave amplitude and a second value for signal amplitudes lower than the wave amplitude. The resulting pulse train, upon integration, produces a replica of the original signal having an amplitude V_g. To vary the ratio V_g/V_i, specifically to reduce it for higher signal amplitudes, a square wave giving rise to the triangular wave is amplitude-modulated in response to the peaks of the signal voltage V_i.

3,836,857

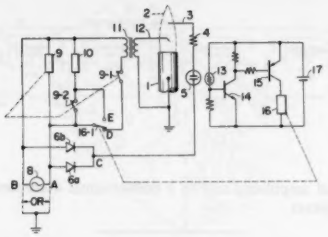
FLAME DETECTOR

Kazutoshi Ikegami, Kokubunji; Juichi Honda, Fujisawa; Motosi Miyanaka, Yanai, and Mitsuoki Yamamoto, Suginami, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

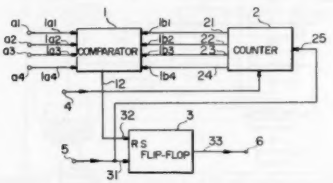
Filed Apr. 24, 1973, Ser. No. 354,078
Claims priority, application Japan, May 12, 1972, 47-46406; May 12, 1972, 47-46407; May 12, 1972, 47-46408
Int. Cl. H03k *3/26;* **G01n** *27/00*
U.S. Cl. 328—6 **6 Claims**

A flame detector wherein a pair of diodes are connected in series with opposite directions of conduction across the respective terminals of an AC power source, and a light emitting device, such as a discharge tube, is connected between the point of connection of the two diodes and a flame

rod disposed in a flame to be detected. With this construction, a predetermined voltage is applied between a burner and the flame rod, whichever side of the AC power source is grounded.



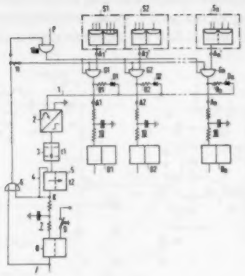
3,836,858
PULSE WIDTH SETTING APPARATUS
Akira Kitano, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Aichi-ken, Japan
Filed June 20, 1972, Ser. No. 264,589
Claims priority, application Japan, June 30, 1971, 46-47789
Int. Cl. H03k *5/04*
U.S. Cl. 328—58 **4 Claims**



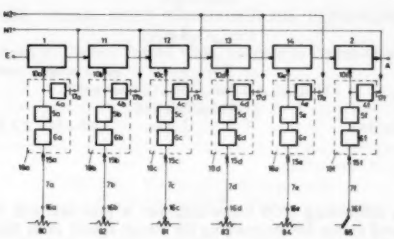
A pulse width setting apparatus provided with a switching circuit which is switched from one state to the other state upon receipt of a trigger pulse, a counting circuit for counting clock pulses, and a comparator for comparing a count of said counting circuit with a given binary code for determining a pulse width and generating a signal when the count becomes equal to the binary code to thereby restore said switching circuit to the original one state.

3,836,859
CONTROL CIRCUIT FOR PREVENTING THE RESPONSE OF A PROGRAMMED CONTROLLER TO SIMULTANEOUSLY GENERATED CONTROL SIGNALS
Dieter Behrens, and Lothar Wache, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Apr. 5, 1973, Ser. No. 348,277
Claims priority, application Germany, Apr. 6, 1972, 2216591
Int. Cl. H03k *17/26, 17/28*
U.S. Cl. 328—75 **10 Claims**

A control circuit for preventing the response of a programmed controller to a plurality of simultaneously generated control signals, comprising a plurality of AND gates coupled to the signal generators of the controller; a monostable flip-flop means coupled to the outputs of the and gates for generating a first gate control signal whenever two or more control signals are generated simultaneously by the signal generators; and a bistable flip-flop means, coupled to the monostable flip-flop means, for generating a second gate control signal a predetermined time period after generation of the first gate control signal. The first and second gate control signals prevent the generation of output signals by the AND gates and the transmission of the signals to control signal storage devices in the controller.



3,836,860
MEASURING TEST SIGNALS OF TEST LINES WHICH HAVE PASSED THROUGH AN AMPLIFIER, PARTICULARLY A VIDEO AMPLIFIER
Hans Horneff, Darmstadt, Germany, assignor to Robert Bosch Fernsehanlagen GmbH, Darmstadt, Germany
Filed May 22, 1972, Ser. No. 255,340
Int. Cl. H03f *19/00*
U.S. Cl. 330—2 **11 Claims**

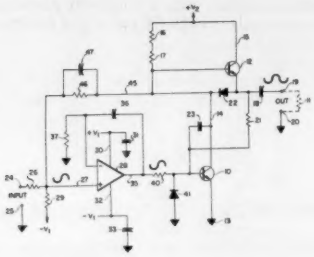


Measuring test signals which have passed through a video amplifier having continuously adjusted amplification characteristics during transmission of a video signal. The test signal is fed during a blanking interval of the picture thus transmitted with switching provided to cause selected elements of the amplifier to have nonvariable amplification characteristics during the part of the blanking interval used for testing.

3,836,861
LOW DISSIPATION POWER AMPLIFIER
Allen M. Diamond, Orange, Calif., assignor to Beckman Instruments Inc., Fullerton, Calif.
Filed Mar. 2, 1973, Ser. No. 337,420
Int. Cl. H03f *3/26*
U.S. Cl. 330—15 **2 Claims**

A push-pull amplifier utilizing substantially identical first and second transistors, the collector of the first transistor being directly coupled to the base of the second transistor, the base of the first transistor being coupled through a resistor to the emitter of the second transistor. The bias for the first transistor is supplied through an operational amplifier through a current limiting resistor to the base thereof, while the bias to the second transistor is controlled by a feedback loop inter-

connecting the base thereof and the input of the operational amplifier. A diode is connected between the emitter and base



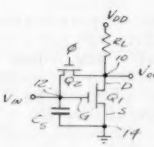
of the second transistor to prevent conduction of both transistors at the same time.

3,836,862

FIELD EFFECT TRANSISTOR LINEAR AMPLIFIER WITH CLOCKED BIASING MEANS

John Leland Seely, Northport, N.Y., and Frank M. Wanlass, Cupertino, Calif., assignors to General Instrument Corporation, Newark, N.J.

Filed Aug. 14, 1972, Ser. No. 280,534
Int. Cl. H03f 3/16
U.S. Cl. 330—25 **18 Claims**



A self-biasing MOS linear amplifier is provided with improved means for maintaining the circuit biased to its linear amplification range. That means comprises a clocked feedback FET operatively connected between the output and input terminals and adapted to charge a storage capacitor at the input during a first clock interval, the bias level applied at the input being a function of the operating characteristic of the switching FET. The storage capacitor is effective to maintain the device so biased throughout the remainder of the clock cycle.

In a second embodiment the circuit comprises a plurality of inverter stages, a single clocked feedback FET being operatively connected between the output and input terminals whereby the circuit is designed to stabilize in its operative linear amplification range during the first clock interval.

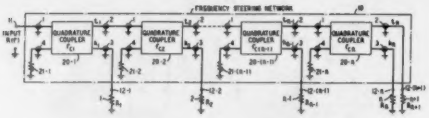
3,836,863

BROADBAND FREQUENCY STEERING NETWORK

Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 22, 1972, Ser. No. 317,620
Int. Cl. H03f 3/60
U.S. Cl. 330—53 **12 Claims**

A frequency steering network, comprising an array of reactive couplers, is described. By suitable selection of the coupler parameters, and the circuits connected thereto, the network can be used to provide a broadband resistance having a prescribed resistance-frequency characteristic; to suppress spurious oscillations in the bias circuit of certain types of oscil-



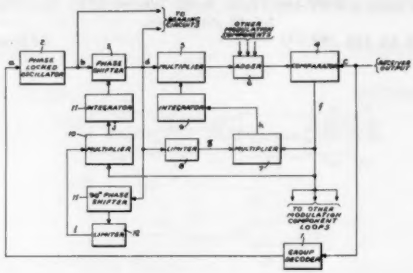
lators and amplifiers; and as a conventional multiplexer and demultiplexer.

3,836,864

METHOD AND APPARATUS FOR DETERMINING TACAN BEARING

Maurice L. Jezo, Cedar Grove, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Apr. 19, 1973, Ser. No. 352,755
Int. Cl. H03b 3/02, 3/04
U.S. Cl. 331—1 R **4 Claims**



This invention relates to a method and apparatus for extracting antenna modulation components by phase locking a locally generated sine wave at the desired frequency with the actual antenna modulation. A phase locked oscillator is triggered at predetermined reference points on the received Tacan signal. The output of the oscillator is phase shifted in the direction of coincidence with th received modulation envelope. A comparator compares the phase shifted signal and the envelope of the received signal and generates an error signal if coincidence does not exist. The error signal is fed back and multiplied betwen phase shifted signal; in one case after the phase shifted signal is limited and in another case after the phase shifted signal is further shifted by 90° and limited. In the first case the result of the multiplication is integrated and used to modify the amplitude of the phase shifted signal. In the second case, the result of the multiplication is integrated and controls the amount of the phase shift imparted on the locally generated signal to achieve coincidence.

3,836,865

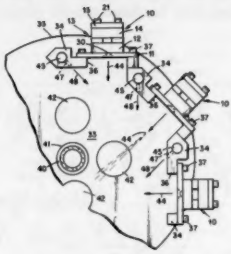
PYROTECHNICALLY EXCITED LASER SYSTEM

Helmut A. Koehler, Livermore; David L. Redhead, Dublin, and George A. Clough, Livermore, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Jan. 10, 1973, Ser. No. 322,563
Int. Cl. H01s 3/09
U.S. Cl. 331—94.5 P **10 Claims**

A pyrotechnic means for optically pumping a lasing medium wherein a plurality of small, confined, pressed cylinders of a

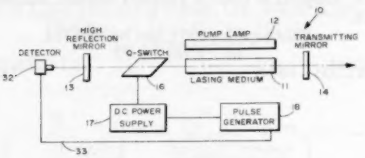
pyrotechnic mixture, e.g., 80/20 wt. % Hf/$KClO_4$, are ignited simultaneously to provide an energy fluence suitable for optically pumping an active (lasing) medium, e.g., Nd-Glass, Nd-YAG.



3,836,866
Q-SWITCHED LASER MODE SELECTION SYSTEM

Eugene O. Ammann, Menlo Park, and Joe Michael Yarborough, Santa Clara, both of Calif., assignors to GTE Sylvania Incorporated, Mountain View, Calif.

Filed Jan. 29, 1973, Ser. No. 327,691
Int. Cl. H01s 3/11
U.S. Cl. 331—94.5 Q **5 Claims**



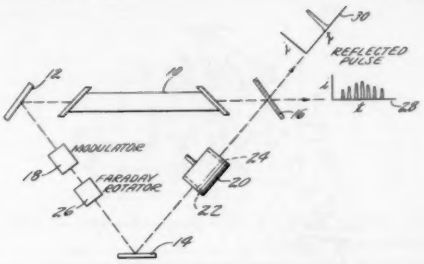
The subject of this invention is a mode selection technique which applies specifically to continuously-pumped, repetitively Q-switched lasers. When the gain of such a laser becomes slightly greater than the hold-off loss of the Q-switch, there is a premature output consisting of a series of relaxation oscillation pulses (or spikes). In the technique of this invention, the presence of the first such relaxation oscillation pulse is detected by a detector external to the laser cavity and consequently used to trigger the opening of the Q-switch. It is important that the Q-switch be opened shortly after the occurrence of the first relaxation oscillation pulse, and in particular, before the occurrence of the second such pulse. The resulting output pulse from the laser has significantly fewer longitudinal and transverse modes than obtained with normal operation of a repetitively Q-switched laser. Since the opening of the Q-switch is triggered by the onset of relaxation oscillations, pulse-to-pulse variations caused by laser mirror vibrations, pump-lamp intensity fluctuations, etc. have no effect on the accuracy of mode control. This mode control is achieved without otherwise affecting the normal Q-switced operation of the lasers; no additional components are required inside the laser other than those normally used in Q-switched lasers.

3,836,867
GAS BREAKDOWN LASER PULSE SELECTOR

David C. Smith, Glatonbury, and Peter R. Solomon, Bloomfield, both of Conn., assignors to United Aircraft Corporation, E. Hartford, Conn.

Filed Mar. 27, 1973, Ser. No. 345,406
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 Z **6 Claims**

A single pulse or a selected number of pulses from a mode-locked laser may be isolated from the laser pulse train. A gas breakdown cell is positioned in the path of the laser pulse train and the laser pulses are focused within the cell. When the intensity of the pulses exceeds the gas breakdown threshold, a plasma is generated which acts as a highly reflecting mirror. In the preferred embodiment using a ring cavity geometry, the laser pulse train travels through the cell in one direction and

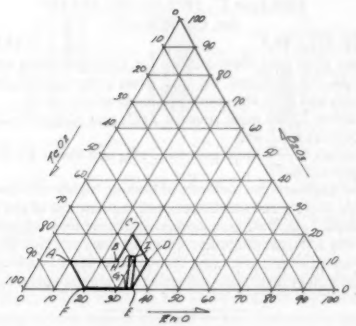


the gas pressure in the cell is adjusted so that breakdown of the gas occurs near the peak intensity of the traveling pulse. The breakdown plasma reflects a portion of the breakdown pulse which propagates in the opposite direction from the original pulse train. A single nonmode-locked laser pulse may be shaped by using the reflection capabilities of the breakdown plasma formed in a gas cell.

3,836,868
LASER GLASS HOST COMPOSITIONS COMPRISING TeO_2 B_2O_3 ZnO

Richard F. Cooley, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed June 27, 1973, Ser. No. 373,905
Int. Cl. H01s 3/16
U.S. Cl. 331—94.5 **14 Claims**

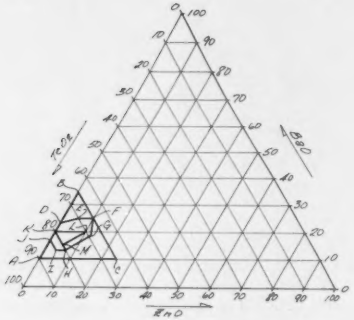


Laser glass host compositions for effective lasing amounts of Nd_2O_3 are disclosed, the host compositions comprising TeO_2, B_2O_3 and ZnO in certain molar proportions. Also disclosed are methods of making highly effective laser articles, such as rods and discs, and the new use of the above-described glass compositions for forming laser articles, the new use including forming laser articles from the compositions, pumping the resultant laser articles to provide an energy inversion, and lasing the pumped article.

3,836,869
LASER GLASS HOST COMPOSITIONS COMPRISING TeO_2, BaO AND ZNO AND METHODS OF MAKING AND USING THE SAME

Richard F. Cooley, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed June 27, 1973, Ser. No. 373,906
Int. Cl. H01s 3/16
U.S. Cl. 331—94.5 **19 Claims**



Laser glass host compositions for effective lasing amounts of Nd_2O_3 are disclosed, the host compositions comprising TeO_2, BaO and ZnO in certain molar amounts. Methods of making highly effective laser articles, including laser rods, also are disclosed. The new use of the above-described TeO_2/BaO/ZnO glass compositions for forming laser articles are disclosed, the new use including forming laser articles from the glasses, pumping the laser articles to provide an energy inversion, and lasing the pumped articles.

3,836,870
LASER GLASS HOST COMPOSITIONS COMPRISING TeO_2 AND BaO

Richard F. Cooley, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed June 27, 1973, Ser. No. 374,107
Int. Cl. H01s 3/16
U.S. Cl. 331—94.5 **15 Claims**

Laser glass host compositions for effective lasing amounts of Nd_2O_3 are disclosed, the laser glass compositions comprising TeO_2 and BaO, the compositions generally being:

1. about 77–90 mole percent TeO_2 and about 10–23 mole percent BaO; and
2. about 67–73 mole percent TeO_2 and about 27–33 mole percent BaO.

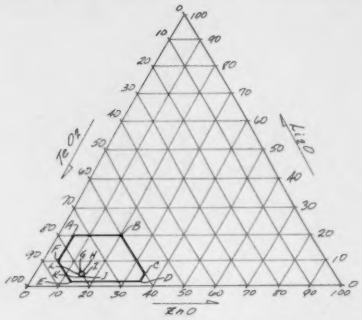
Also disclosed are methods of making highly effective laser articles, such as rods and discs, and the new use of the above-described TeO_2/BaO glass compositions for forming laser articles, the new use including forming laser articles from the glass compositions, pumping the resultant laser articles to provide an energy inversion, and lasing the pumped article.

3,836,871
LASER GLASS HOST COMPOSITIONS COMPRISING TeO_2, Li_2O AND ZnO

Richard F. Cooley, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed June 27, 1973, Ser. No. 374,108
Int. Cl. H01s 3/16
U.S. Cl. 331—94.5 **14 Claims**

Laser glass host compositions for effective lasing amounts of Nd_2O_3 are disclosed, the host compositions comprising TeO_2, Li_2O and ZnO in certain molar amounts. Also disclosed are methods of making highly effective laser articles, such as rods, and also the new use of the above-described glass compositions for forming laser articles, the new use including

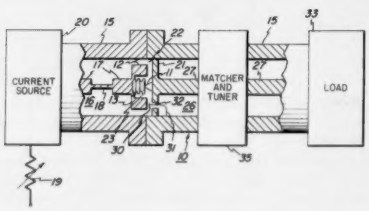


forming laser articles from the compositions, pumping the resultant laser articles to provide an energy inversion, and lasing the pumped articles.

3,836,872
AVALANCHE DIODE OSCILLATOR

Se Puan Yu, and Wirojana Tantraporn, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sept. 21, 1973, Ser. No. 399,314
Int. Cl. H03b 5/12
U.S. Cl. 331—107 R **7 Claims**



A circuit for the operation of an avalanche diode in the TRAPATT mode includes a capacitor connected in shunt with the diode and charged from a high impedance current source to a voltage which produces oscillations across the capacitor. Means are provided for varying the charging rate of the capacitor to vary inversely the frequency of the TRAPATT oscillations.

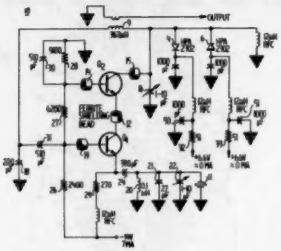
3,836,873
LOW NOISE VHF CRYSTAL HARMONIC OSCILLATOR

Daniel J. Healey, III, and Michael M. Driscoll, both of Baltimore, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 2, 1973, Ser. No. 375,524
Int. Cl. H03b 5/36
U.S. Cl. 331—116 R **10 Claims**

A two transistor VHF crystal controlled harmonic oscillator provides a large ratio of output power to crystal unit power dissipation without significant degradation of oscillating resonator Q from the crystal unit Q defined herein as Q_r. A cascode amplifier configuration comprising first and second transistors in combination with inductance and capacitance elements provides an oscillator configuration with phase shift in the vicinity of the oscillator frequency dominantly con-

trolled by the quartz crystal unit motional impedance parameters. The first and second transistors are operated under linear conditions during the complete cycle of oscillation current, and two hot carrier diodes operated with appropriate biasing



voltages provides the limiting characteristic required in harmonic oscillators. Circuit applications may use one or two VHF crystal units with appropriate antiresonating of circuit capacitance to achieve a desired minimum of phase noise power spectral density in the oscillator circuit.

3,836,874

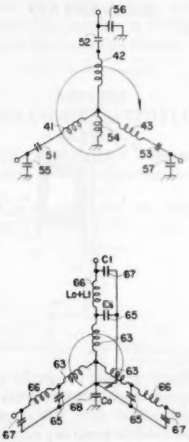
LUMPED ELEMENT CIRCULATOR

Minoru Maeda, Hachioji, and Ichiro Ikushima, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 25, 1973, Ser. No. 372,937

Int. Cl. H01p 1/32

U.S. Cl. 333—1.1 **16 Claims**



In a lumped element circulator wherein three line conductors are arranged on the surface of a ferrimagnetic substrate with cross angles of 120° with respect to one another and in a manner to be insulated from one another, capacitive elements are connected between the input ends of the respective line conductors and an outer conductor. Terminating parts of the respective line conductors are connected to a conductor plate provided on the back of the ferrimagnetic substrate, and a DC magnetic field is applied perpendicularly to the plane of the ferrimagnetic substrate. The lumped element circulator comprises capacitors connected in series with the respective line conductors, and a coil connected between the conductor plate and the outer conductor.

3,836,875

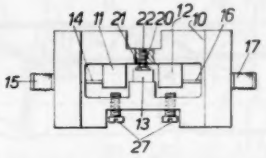
MICROWAVE LIMITER HAVING VARIABLE CAPACITANCE DIODE IN TUNED CAVITY

James Ritchie Duncan, Dundee, Scotland, and Colin Donald Hannaford, Milnthorpe, England, assignors to Ferranti Limited, Hollinwood, England

Filed Jan. 17, 1973, Ser. No. 324,326

Int. Cl. H03g 11/04, 11/02; H01p 1/22

U.S. Cl. 333—17 **5 Claims**



A microwave-frequency power limiting device comprises a voltage-sensitive reactance arranged to form a tuned circuit having a resonant frequency dependent upon the power applied to the device. The tuned circuit is coupled to an input transmission line by a step-up transformer.

3,836,876

ACOUSTIC SURFACE WAVE DEVICES

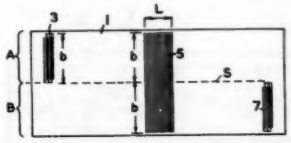
Frank Graham Marshall, and Edward George Sydney Paige, both of West Malvern, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed May 2, 1972, Ser. No. 249,573

Claims priority, application Great Britain, May 5, 1971, 13125/71

Int. Cl. H03h 7/30

U.S. Cl. 333—30 **36 Claims**

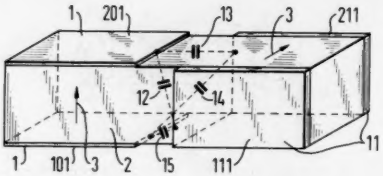


Acoustic surface wave devices of a novel class characterized by the provision of coupling means comprising at least several spaced filamentary electrical conductors extending over a first region and a second region for causing acoustic surface waves propagated across the coupling means in the first region to interact with acoustic surface waves propagated across the coupling means in the second region, by means of alternating electric signals induced on the filamentary electric conductors. The regions to be coupled are preferably formed on piezoelectric material, but modified forms of the coupling means can be made operable with other materials and suitable biassing fields. The described devices include acoustic beam width changing, impedance matching, track changing and phase-sensitive switching devices; a hybrid junction device, resonator and recirculating filter devices, tapped acoustic delay lines, unidirectional transducers, acoustic surface wave reflectors and mode discriminators, electrically-controlled acoustic beam switches and directional couplers, acoustic beam splitters, and means for reducing unwanted reflections of acoustic surface waves.

3,836,877
PIEZOELECTRIC FILTER

Max Guntersdorfer, Zornedin[illegible], and Helmut Thomann, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berling & Munich, Germany

Filed June 27, 1973, Ser. No. 374,123
Claims priority, application Germany, June 27, 1972, 2231467
Int. Cl. H03h 9/26, 9/32
U.S. Cl. 333—72 6 Claims

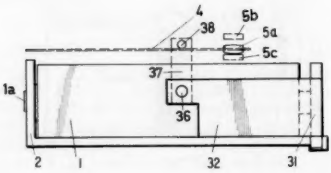


A piezoelectric filter arrangement is provided utilizing a piezoelectric body on which are arranged pairs of input and output electrodes. The electrodes are electrically isolated from one another, and the piezoelectric body is permanently polarized so that the polarization is aligned between these pairs of electrodes.

3,836,878
TILTING SYSTEM

Werner Minks, Kleingeschaidt, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 31, 1973, Ser. No. 411,369
Claims priority, application Germany, Oct. 31, 1973, 2253456
Int. Cl. H01h 50/26
U.S. Cl. 335—128 6 Claims



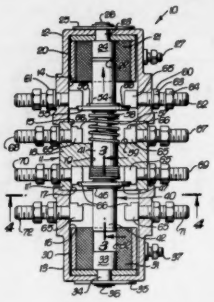
A relay or similar electromagnetic device in which an armature is tilted in response to the operating magnetic flux, and in which an orthogonal tilt freedom is provided to increase the ability of the relay to free sticking contacts, particularly in a double pole arrangement.

3,836,879
DUAL REVERSING SOLENOID OPERATED SWITCH

David Frye, Gardena, Calif., assignor to Norco Sales and Manufacturing Company, Gardena, Calif.

Filed Oct. 15, 1973, Ser. No. 406,591
Int. Cl. H01h 50/58
U.S. Cl. 335—136 7 Claims

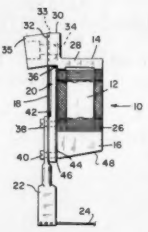
A reversing solenoid operated switch unit has a single central plunger which carries two heavy gage copper contact discs. Facing opposite surfaces of each disc are pair of diametrically spaced heavy duty electrical contact shoulders at locations adapted to be contacted by and interconnected by the adjacent disc as each disc moves axially from one pair of shoulders to the other, thereby to periodically reverse the flow in each of two circuits.



3,836,880
MATRIX PRINTER DRIVE ELEMENT

Arthur L. Matschke, Westport, Conn., and Jack K. Horowitz, Laurelton, N.Y., assignors to Tele Speed Communications, Inc., Long Island City, N.Y.

Filed Oct. 25, 1973, Ser. No. 409,699
Int. Cl. H01f 7/13
U.S. Cl. 335—274 11 Claims



An improved electromagnet design for use as a dot-matrix printer drive element. A solid winding core is provided with integral pole pieces at both ends. A leaf spring is secured to a first pole piece and extends generally parallel to the axis of the core. A magnetic field shunt piece is secured at the free end of the spring on the side facing the core. A printing wire shoe is also secured to the leaf spring at its free end, and extends away from it. The printing wire is affixed in the shoe and extends back across the axis of the core. In the un-energized condition, there is a gap between the shunt and the second pole piece that is roughly one-half of the desired stroke of the printing wire. The electromagnet is of very low mass, but operates at high speed with a long printing stroke having maximum force at the moment of impact of the printing wire on the printing medium. This design allows a plurality of such drive elements to be radially mounted in a circle with all of the respective printing wires close to the center of that circle. The center of the circle will also coincide with the centerline axis of the printed characters.

3,836,881

DOUBLE-TUNED CIRCUIT DEVICE WITH ADJUSTABLE COUPLING COEFFICIENT MEANS

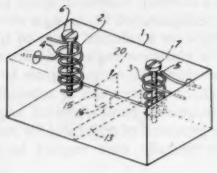
Yasumi Koizumi, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Sept. 26, 1973, Ser. No. 401,053

Claims priority, application Japan, Nov. 14, 1972, 47-113985

Int. Cl. H01f 21/10

U.S. Cl. 336—87 10 Claims



A double-tuned circuit device includes a housing, a pair of helical resonator units mounted in the housing and means for adjusting the electromagnetic coupling coefficient between the resonator units. The adjusting means is interposed between the units and comprises a movable electromagnetic shielding member electrically connected to the housing and means for mounting the member within the housing such that the position of the member relative to the resonator units may be varied. In the first embodiment the shielding member is connected to the mounting means by a bendable neck portion. In the second embodiment the shielding member is formed in slidable engagement with the mounting means. In the third embodiment the shielding member is frictionally held to the sides of the housing by the mounting means.

3,836,882

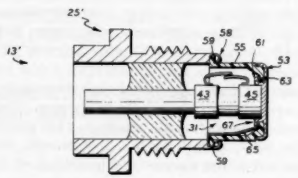
TEMPERATURE COMPENSATED FLUID SENSOR DEVICE

Nikolaus A. Szeverenyi, and David F. Thompson, both of Warren, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Aug. 16, 1973, Ser. No. 388,940

Int. Cl. H01h 61/02, 37/04

U.S. Cl. 337—102 8 Claims



There is described an improved sensor device for detecting the presence or absence of fluid. The device comprises a housing member defining a chamber, a tip member adapted for being exposed to a fluid and secured to the housing, a heat conductive member within the chamber, a heater means within the chamber in conductive relationship to both the tip member and the heat conductive member, and first and second heat responsive means. The improvement comprises providing the tip member with a first portion of a relatively thermally conductive material and a second portion of a relatively thermally insulative material.

3,836,883

FUSE AND RESISTOR DEVICE

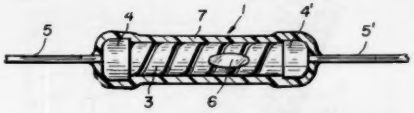
Tatsunori Takayasu, Irima, and Kouzi Higashi, Kaminiikawa, both of Japan, assignors to Hokuriku Electric Industry Co., Ltd., Toyama-Prefecture, Japan

Filed Dec. 6, 1972, Ser. No. 312,500

Claims priority, application Japan, Dec. 8, 1971, 46-98713, June 5, 1972, 47-55135

Int. Cl. H01h 85/04

U.S. Cl. 337—163 17 Claims



A fuse and resistor device is disclosed comprising a substrate of insulating material, a resistance film of tin oxide deposited on said substrate, a layer of glass material having a relatively lower melting point and deposited on said resistance film and an insulation layer surrounding both said resistance layer and said glass layer. When overcurrent passes through the device it acts as a fuse resulting from the resistance film partially or wholly migrating into the glass layer now melted on the resistance film thus preventing the current from flowing through the device.

3,836,884

SEQUENTIAL ACTIVATION OF ELECTRICAL APPARATUS

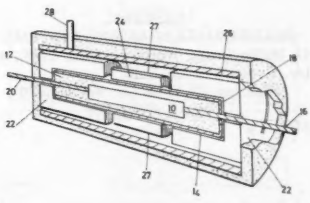
George Albert Oliver, Johannesburg, South Africa, assignor to Exec (Proprietary) Limited and AE & CI Limited, Johannesburg, South Africa, part interest to each

Filed Jan. 18, 1973, Ser. No. 324,569

Claims priority, application South Africa, 72/0375

Int. Cl. H01h 85/04

U.S. Cl. 337—163 16 Claims

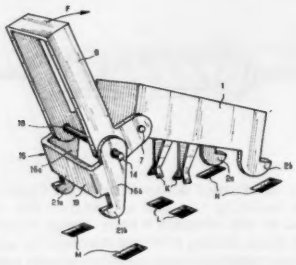


A time delay device consists of a pair of spaced conductors a conductive link made from a low melting material located between the two conductors and in contact with one of the conductors, and a heating resistor to cause the link after a predetermined time to melt and bridge across the two conductors.

ERRATA

For Classes 339—17, 339—25, 339—21, 339—45, 339—56, 339—91, 339—95, 339—97, 339—99, 339—119, 339—177, 339—97 and 339—259 see: Patents Nos. 3,836,935 thru 3,836,947

3,836,885
ELECTRICAL CONNECTORS
Jacques Larsile, La Varenne-St-Hilaire, France, assignor to Technilec, Gonesse, France
Filed May 31, 1973, Ser. No. 365,742
Claims priority, application France, June 13, 1972, 72.21157
Int. Cl. H01r *13/54*
U.S. Cl. 331—75 R **10 Claims**

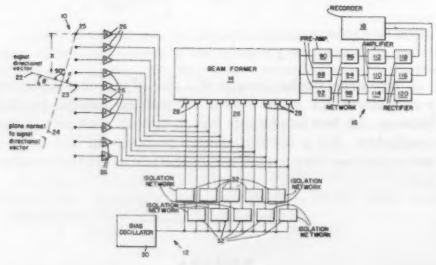


An articulated plug-in connector suitable for attachment to a duct carrying electrical conductors has a base including a lever pivoted about a first axis located opposite hook fixing means integral with the base and engaging in anchoring apertures in the duct. A yoke carrying second hook fixing means is pivoted about a second axis carried by the lever, and the second hook fixing means engages in further anchoring apertures in the duct when the lever is depressed bringing the axes into line with the second hook fixing means on a line at right angles to the duct.

ERRATA

For Classes 340—1, 340—3, 340—5, 340—6, 340—15 and 340—16 see:
Patents Nos. 3,836948 thru 3,836,953

3,836,886
BEAMFORMER SCANNING SYSTEMS
Charles O. Mallinckrodt, Woodland Hills, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Jan. 28, 1966, Ser. No. 523,670
Int. Cl. G01s *3/80*
U.S. Cl. 340—6 R **24 Claims**

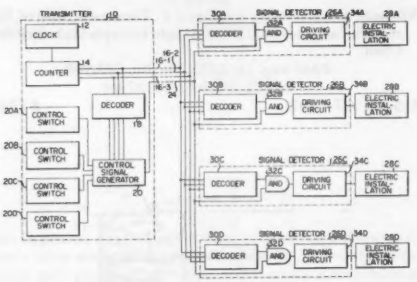


Beamformer scanning systems having a magnetic signal recording medium and a plurality of magnetic recorders for recording transducer signals generated by a plurality of transducers arranged in an array on the recording medium in response to input signals received from a plurality of elevation angles through a transmission medium such as air, water or earth. Apparatus is provided for moving the recording medium adjacent to the recorders in a direction to produce magnetic tracks of the transducer signals on the recording medium. A magnetic reproducer scans the tracks for generating a predetermined number of output signals, the output signals each having an instantaneous amplitude equal to the algebraic sum of the instantaneous amplitudes of the transducer signals produced by one of the input signals. A variable speed motor is provided for moving the recording medium which can be operated either at a constant rotational speed to provide output signals at the predetermined beam angle elevations, or the speed can be varied over a selected range of speeds to steer the beams about the elevation angles. Additionally, provision is made for compensating the output signals so that the gain versus frequency characteristics will be substantially linear in a predetermined frequency band. Azimuth angle search can be achieved by the provision of apparatus for moving the magnetic reproducers laterally with respect to the magnetic tracks.

ERRATUM

For Class 340—15.5 see:
Patent No. 3,835,953

3,836,887
CONTROL SYSTEM FOR ELECTRIC INSTALLATIONS ON VEHICLE
Atsushi Ueda, and Mitsuaki Ishii, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 18, 1972, Ser. No. 315,835
Int. Cl. H04q *9/00*
U.S. Cl. 340—163 **3 Claims**

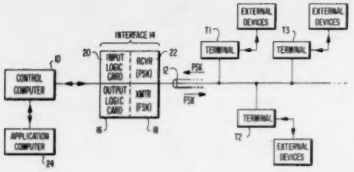


3-bit counts on a binary counter counting clock pulses are decoded and a control signal generator responds to those decoded counts assigned to four control switches to generate a time-divided multiplexed control signal including pulses resulting from the switches in their "ON" position. The control signal and 3-bit counts are transmitted in parallel to all four detectors. In each detector that count assigned to the associated switch is decoded to extract that pulse originating from that switch, if present, from the control signal. The extracted pulse causes the associated electric installation to be put in operation. An analog PAM multiplexed signal may be used as the control signal.

3,836,888
VARIABLE MESSAGE LENGTH DATA ACQUISITION AND RETRIEVAL SYSTEM AND METHOD USING TWO-WAY COAXIAL CABLE

Clyde O. Boenke, 1409 Orborview Blvd.; Murray H. Miller, 1534 Glastonbury, both of Ann Arbor, Mich. 48103; Michael R. Levine, 3605 Fredrick; Victor H. Rigotte, B595 Greenbrier Blvd., both of Ann Arbor, Mich. 48105; Weston E. Vivian, 2717 Kerutworth Dr., and William C. Hall, 10 Ridgeway, both of Ann Arbor, Mich. 48104

Filed May 22, 1972, Ser. No. 255,477
Int. Cl. G06f *3/04*; H04j *9/00*; H04n *7/14*
U.S. Cl. 340—172.5 **8 Claims**



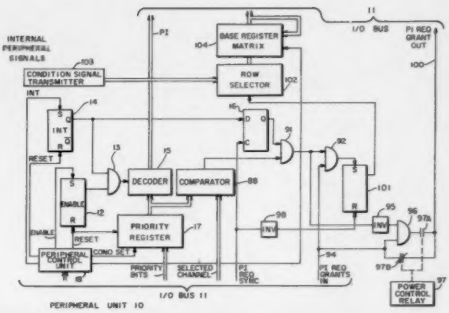
A control computer is connected via a coaxial cable to a plurality of remote terminals. Data and command signals are transmitted in the forward direction from the computer to the terminals by time-multiplexing the signals on one channel of the cable and data and request signals are transmitted in the return direction from the terminal to the computer by time-multiplexing these signals on a different channel of the cable. Each terminal is equipped with several input-output devices which operate at different speeds. The computer operates at high speed to fill its main memory with commands. An interface is connected between the computer and the cable and is capable of operating at different speeds, i.e., at different time intervals between transmissions of digital words to different terminals or between repeated transmissions to the same terminal. It normally operates at a speed lower than the speed of the computer to service the low speed terminal devices. However, when a command for a high speed operation at a terminal is recognized, the interface enters a burst mode which supplies commands to the terminal at the high speed of the computer. Transmission in the forward direction is accomplished by frequency shift keying, and in the return direction by phase shift modulation. Words are transmitted serial-by-bit. Each terminal has a unique means for storing its permanent terminal address parallel-by-bit for comparison with serial address bits transmitted by the computer. The terminals are divided into several different major groups. The computer addresses the terminals by first transmitting a major address to select the proper group, and then sends a minor address to select the terminal within the major group. Each terminal is provided with a local storage and a novel keyboard for entering request codes into the storage. Each terminal is also provided with a visual display means for displaying data transmitted from the computer. A novel one-line display also provides the terminal with a visual display of the information entered on the keyboard or a message sent to the terminal.

3,836,889
PRIORITY INTERRUPTION CIRCUITS FOR DIGITAL COMPUTER SYSTEMS

Alan Kotok, Waltham; Allan R. Kent, Framingham, and David A. Gross, Acton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 23, 1973, Ser. No. 344,089
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **17 Claims**

A priority interruption circuit for use in a digital computer system. When a peripheral unit requires communication with a central processor unit or memory unit, it transmits a signal over a priority interruption line which corresponds to an assigned system priority level. The central processor unit receives this signal and a priority circuit starts a priority request sequence concurrently with other central processor unit operations. During this sequence the central processor unit generates data and control signals onto predetermined

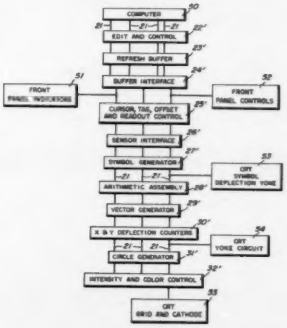


conductors in an interconnecting bus. One peripheral unit responds to all these signals and generates data onto the bus identifying itself and the nature of the service required. The central processor unit then uses a priority interruption instruction sequence to process this data the peripheral unit generates and it may then establish the needed communications without performing any polling operations.

3,836,890
VISUAL DISPLAY SYSTEM

Frank J. Arkell, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Apr. 9, 1973, Ser. No. 349,908
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **3 Claims**

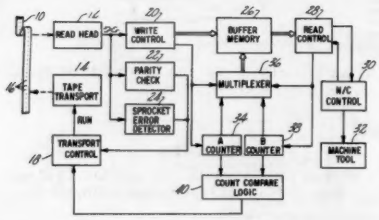


A visual display device adapted to perform a plurality of functions with the electronics for each function being incorporated into a separate module. A bus oriented receptacle, having a plurality of module receiving positions is connected to bus lines so that each module can be received in the receptacle in any of a plurality of positions and each module can be separately addressed by the visual display device as the function performed by each module is desired.

3,836,891
TAPE READER SYSTEM WITH BUFFER MEMORY

George H. McDaniel, Northville, Mich., assignor to The Bendix Corporation, Detroit, Mich.

Filed July 5, 1973, Ser. No. 376,484
Int. Cl. G06f 7/00
U.S. Cl. 340—172.5 14 Claims

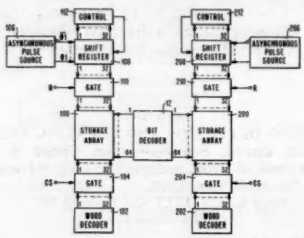


A tape reader system for numerical control systems including a segmented buffer memory into which characters are read from tape and stored sequentially. One address counter keeps track of "write" addresses and another counter keeps track of "read" addresses. The most significant digits of the two counters are compared to control the writing of fresh data into memory whenever the read address bears other than a selected proximity of the write address.

3,836,892
D.C. STABLE ELECTRONIC STORAGE UTILIZING A.C. STABLE STORAGE CELL

Roy R. De Simone, Burlington; Nicholas M. Donofrio; Richard H. Linton, both of Essex Junction; George Sonoda, and William T. Wade, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1972, Ser. No. 267,719
Int. Cl. G11c 11/40
U.S. Cl. 340—173 DR 9 Claims

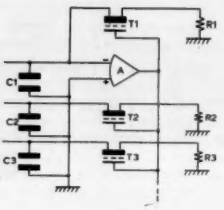


An electronic data storage which operates as a DC stable storage array, but retains the advantages of an AC stable storage cell circuit. The AC stable storage cells are regenerated at a frequency asynchronous with respect to the storage cycle time. Gating means inhibit the regenerating signals when the system desires access, thereby permitting the storage cells to be accessed for information at any time in a completely random access mode.

3,836,893
CAPACITIVE COMPUTER CIRCUITS

Ralph James Lamden, Reading, England, assignor to Ultra Electronics Limited, Marlow, Buckingham, England

Filed Feb. 22, 1973, Ser. No. 334,766
Claims priority, application Great Britain, Feb. 25, 1972, 8732/72
Int. Cl. G11c 11/40, 11/24
U.S. Cl. 340—173 CA 7 Claims

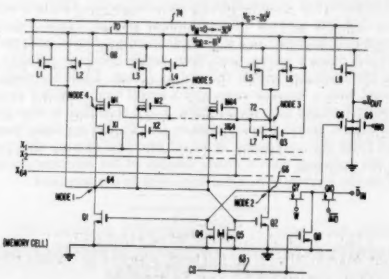


A capacitive computer circuit comprises a field effect switch connected to a storage capacitor, means for applying a signal characteristic to or deriving a signal characteristic from the capacitor, and means for compensating for errors in the derived signal due to leakage current or stray capacitance in the circuit.

3,836,894
MNOS/SOS RANDOM ACCESS MEMORY

James R. Cricchi, Catonsville, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 22, 1974, Ser. No. 435,552
Int. Cl. G11c 11/40, 7/00
U.S. Cl. 340—173 R 9 Claims



A non-volatile random access memory comprising silicon on sapphire MNOS memory elements incorporated in an array having a plurality of like memory cells. Each cell is configured to provide charge enhancement symmetrically in both the read and write modes to restore or refresh the threshold voltage states of the memory elements and particularly the high or more negative threshold voltage state.

3,836,895

OPTO-MAGNETIC MEMORY

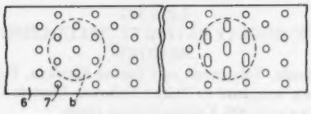
Frederik Ate De Jonge, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 7, 1972, Ser. No. 304,389

Claims priority, application Netherlands, Nov. 13, 1971, 7115633

Int. Cl. G11c *11/14, 11/42*

U.S. Cl. 340—174 YC 4 Claims



A device for the magnetic storage of data which comprises a plate of a magnetizable material having a periodic structure of magnetic domains. Recording data occurs with an external magnetic field having a value at which 2 types of magnetic domains having different sizes can occur. The size of a magnetic domain can be varied by selective irradiation with light.

3,836,896

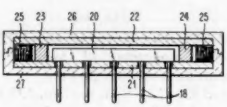
NON-VOLATILE MAGNETIC DOMAIN DEVICE HAVING BINARY VALUED BIAS FIELD EXCITATION

Alfred Aaron Rifkin, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1972, Ser. No. 267,295

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 TF 8 Claims



A packaged magnetic domain device provided with a bias magnetic field whose magnitude is adjustable to one of two different values for domain formation and domain erasure, respectively. The domain devices are packaged with a permanent magnet and an electromagnet whose additive magnetic fields constitute the bias field. Additional provision is made in the same package for a pair of orthogonal in-plane switching magnetic fields for domain propagation. Thermocouple means within the package and adjacent the magnetic domain chips monitors chip temperature and produces a proportional signal to control the electromagnet to maintain constant magnetic domain bubble size irrespective of temperature variations.

3,836,897

CIRCULAR MAGNETIC DOMAIN DEVICES

Anthony Marsh, Blisworth, England, assignor to Plessey Handel und Investments A.G., Zug, Switzerland

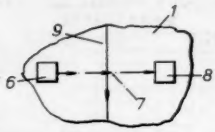
Filed Oct. 6, 1972, Ser. No. 295,785

Claims priority, application Great Britain, Oct. 13, 1971, 47621/71

Int. Cl. G11c *11/14, 19/00*

U.S. Cl. 340—174 TF 11 Claims

A circular magnetic domain device wherein propagating circular magnetic domains are detected by causing the domains to interact with a wave, i.e., a magnetic wave or an acoustic wave, generated in, or on the surface of, a layer of uniaxial magnetic material within which the domains are generated and caused to propagate. Interaction of a domain



with the wave causes the wave to be attenuated, amplified, phase shifted or distorted.

ERRATA

For Classes 340—52, 340—146 and 340—148 see: Patents Nos. 3,836,955 thru 3,836,959

3,836,898

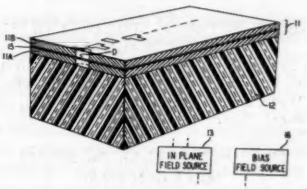
MAGNETIC BUBBLE STRUCTURE FOR SUPPRESSION OF DYNAMIC BUBBLE CONVERSION

Andrew Henry Bobeck, Chatham; Joseph Edward Geusic, and Fred Bassett Hagedorn, both of Berkeley Heights, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 9, 1973, Ser. No. 404,424

Int. Cl. G11c *11/14, 19/00*

U.S. Cl. 340—174 TF 7 Claims



The dynamic conversion of a normal magnetic bubble to a relatively low mobility form during high-speed operation of bubble devices is suppressed in structures which tolerate only negligible changes in the magnetic configuration of the wall of the bubble.

3,836,899

INTRUSION DETECTION AND LOCATING SYSTEM

Kenneth M. Duvall, Sunnyvale, and Gerald K. Miller, Saratoga, both of Calif., assignors to GTE Sylvania Incorporated, Mountain View, Calif.

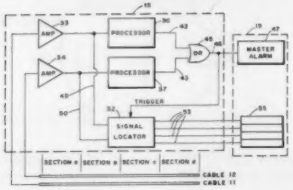
Filed Sept. 4, 1973, Ser. No. 393,797

Int. Cl. G08b *13/02*

U.S. Cl. 340—261 9 Claims

A disturbance detection and location system comprises an elongated composite sensor line having a pair of closely spaced coaxial electret cables with known different sensitivities over their lengths and circuits responsive to electrical signals from the cables caused by a disturbance for producing an indication of the disturbance and its location. Such a system is useful for fence-type perimeter intrusion detection where the disturbances to be identified are intruders climbing or cutting the fence. The cables have predetermined different responses to the same mechanical disturbance occurring at the different locations throughout their lengths and measurement of this response difference provides a basis for identify-

ing the location of the disturbance along the monitored line. The cables are electrically connected at one of their adjacent ends to signal processing circuits which correlate the difference in known sensitivity-distance variations of the cables to indicate both the existence of a disturbance (climbing of fence, cutting of fence, etc.) and its location along the cables.



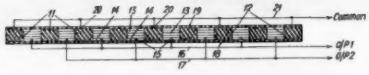
3,836,900

RECORDING OR ALARM DEVICES

John William Brian Mansfield, Bromley, England, assignor to Fleet Electronics Limited, London, England

Filed Jan. 26, 1973, Ser. No. 326,876

Int. Cl. A61b *5/10*

U.S. Cl. 340—279 **6 Claims**

A mattress for detecting the presence or absence of movement of a living creature resting upon it embodies resilient resistor material connected to electrical circuit leads in such manner that movements of the living creature e.g. breathing, produce output electrical pulses that are transmitted to a monitoring unit. The resilient resistor material is arranged in stacks of separate layers of such material alternated with intervening regions of resiliently deformable support material so that the movements to be detected are transmitted to the resilient resistor material without the latter becoming unduly compressed.

3,836,901

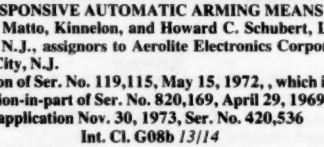
MOTION-SENSITIVE ALARM WITH LINE-CORD-RESPONSIVE AUTOMATIC ARMING MEANS

Victor G. Matto, Kinnelon, and Howard C. Schubert, Leonia, both of N.J., assignors to Aerolite Electronics Corporation, Union City, N.J.

Division of Ser. No. 119,115, May 15, 1972, , which is a continuation-in-part of Ser. No. 820,169, April 29, 1969,. This application Nov. 30, 1973, Ser. No. 420,536

Int. Cl. G08b *13/14*

U.S. Cl. 340—280 **7 Claims**



A circuit and apparatus adapted to be mounted entirely or in part within the device to be protected includes an alarm circuit loop and a control loop, with the state of the control loop being determined by whether the line cord of the protected device is in or out of the wall socket. The control loop can thus disable or enable the alarm circuit, depending on the position of the power cord. However, actual operation of the alarm circuit requires both a change in the state of the control circuit due to the state of the line cord and a change in the alarm circuit due to movement of the protected device.

3,836,902

GRAPHIC DISPLAY HAVING RECIRCULATING VIDEO MEMORY

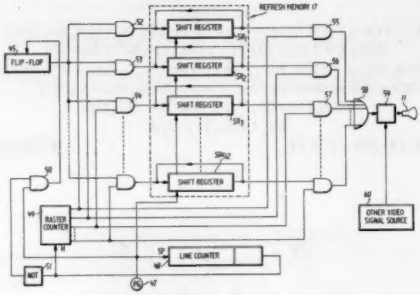
Nobuo Okuda, Yokohama, and Tomoo Kunikyo, Tokyo, both of Japan, assignors to Tokyo Shibaura Electric Company, Ltd., Kawasaki-shi, Kanagawa-ken, Japan

Filed Dec. 14, 1972, Ser. No. 315,012

Claims priority, application Japan, Dec. 14, 1971, 46-101628

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 AD **5 Claims**



Graphic information from an electronic computer or the like is written into a memory matrix in a dotted pattern corresponding to a figure to be displayed using a function generator which generates line segments, corresponding to the graphic information. The information in the memory matrix is then shifted into a recirculating memory for displaying the graphic information in the form of a figure on a CRT, such as the screen of a TV set. The recirculating memory is synchronized with the raster scan of the TV set, and thus there is no need for synchronizing the display system with the computer.

3,836,903

DISPLAY BLANKING CIRCUIT

Thomas Russell Lawrence, Omaha, Nebr., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

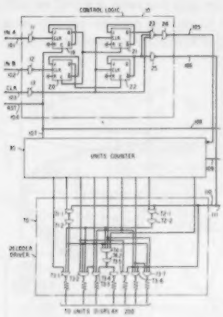
Filed Dec. 22, 1972, Ser. No. 317,728

Int. Cl. G09f *9/32*

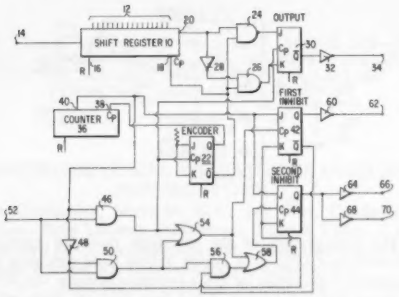
U.S. Cl. 340—336 **4 Claims**

A representation of the phase difference between two digital signals is gated to, and displayed on, a plurality of indicator elements. The gating circuitry is enabled when both signals contain transitions having a sufficiently steep slope to define signals digital in nature and when the signal transitions

arrive in the proper sequence. At all other times the gating circuitry is disabled so as to blank the display, whereby only representations of the phase difference between valid digital input signals are displayed.



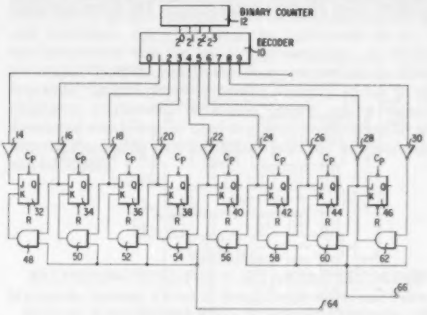
3,836,904
OUTPUT ENCODER AND LINE DRIVER
Charles Cross, Glenside, Pa., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Dec. 12, 1972, Ser. No. 314,306
Int. Cl. H03k *13/24*
U.S. Cl. 340—347 DD **5 Claims**



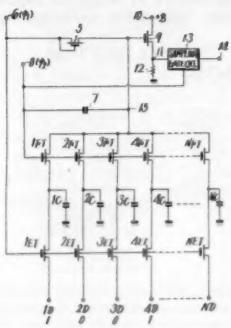
A transmitter sequencer is disclosed having an encoder section and a transmission line driving section. The encoder serves to generate a biphase output code from an input level and to pass the coded message to the line driver. The line driver is normally inhibited to prevent undue loading of the transmission line, but is enabled when a message in biphase code is to be transmitted.

3,836,905
ANALOG TO DIGITAL CONVERTER
Charles Cross, Glenside, Pa., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Dec. 12, 1972, Ser. No. 314,308
Int. Cl. H03k *13/06*
U.S. Cl. 340—347 AD **2 Claims**

An analog to digital converter is disclosed having control and comparator portions. The control portion is formed by a number of J-K flip flops arranged to sequentially receive on their J inputs the decoded output of a binary counter. The flip flops in turn control by their Q outputs a number of analog switches in the comparator portion. The switches are connected to feed a reference voltage to a ladder network and obtain a voltage for comparison with a multiplexed analog voltage in a comparator. The output of the comparator controls the setting and resetting of the flip flops with their final set giving the binary analog to digital output.



3,836,906
DIGITAL-TO-ANALOG CONVERTER CIRCUIT
Tetsuo Ando, Ebina, and Hiroyuki Matsumoto, Isehara, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Feb. 28, 1973, Ser. No. 336,817
Claims priority, application Japan, Mar. 2, 1972, 47-21874
Int. Cl. H03k *13/04*
U.S. Cl. 340—347 DA **7 Claims**

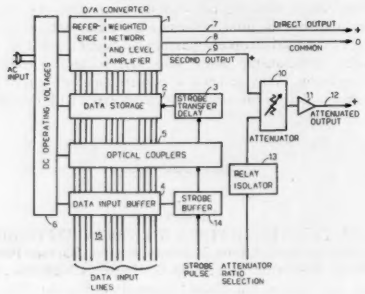


A circuit for converting binary-coded number signals into analog voltages. The 1 and 0 voltage levels of the binary signals are applied through individual switching means to charge separate charge storage elements, the quantity of charge being weighted according to the position of the digit in the number. The total charge is subsequently transferred to a common output charge storage element by way of separate transfer switching elements to produce a voltage that corresponds to the sum of the charge transferred and is, therefore, an analog voltage that corresponds to the binary number.

3,836,907
DIGITAL TO ANALOG CONVERTER
Sarkis Nercessian, Long Island City, N.Y., assignor to Forbro Design Corp., New York, N.Y.
Filed Mar. 21, 1973, Ser. No. 343,420
Int. Cl. H03k *13/02*; **G11c** *11/42*
U.S. Cl. 340—347 DA **12 Claims**

Complementary BCD or binary input signals are transferred through isolating optical couplers to storage. Strobing for

storage selects network switches to provide an analog voltage corresponding to the digital input. Two independent outputs are provided through repeater amplifiers. One output may be divided by 10 or 20 under signal control. The entire converter



is powered from the AC line. Isolation between input and output is maintained up to 1000 volts. The converter is intended for use as a programming voltage for a voltage or current regulated power supply.

3,836,908

DIGITAL TO ANALOG CONVERTER

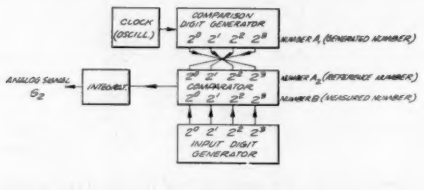
Max Hegendorfer, Forchheim, Germany, assignor to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt, Furth/Bayern, Germany

Filed Dec. 19, 1973, Ser. No. 426,362

Claims priority, application Germany, Apr. 10, 1973, 2317851

Int. Cl. H03k *13/06*

U.S. Cl. 340—347 DA **9 Claims**



An arrangement for converting digital signal to analog signals comprising a comparator, a comparison digit generator and an input digit generator. The ordered inputs and outputs of the comparator and the comparison digit generator, respectively, are connected in a predetermined permuted manner.

3,836,909

DATA INPUT DEVICES

David Cockerell, London, England, assignor to Electronic Music Studios (London) Limited, London, England

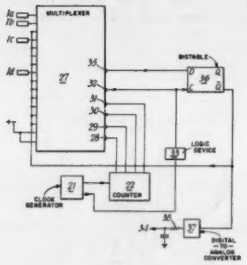
Filed Jan. 8, 1973, Ser. No. 321,799

Claims priority, application Great Britain, Apr. 6, 1972, 16008/72

Int. Cl. G10h *1/02*

U.S. Cl. 340—365 C **16 Claims**

A keyboard is disclosed having static, conductive, pads and means for sensing the change in charge on said pads produced by finger proximity, these means being respective gating circuits each having a plural emitter transistor, one emitter in each case being connected to an associated pad and the other emitters being supplied with gating signals which will cause the associated pad to be charged by way of the one emitter. Such a keyboard is disclosed for musical use having additional such pads for creating signals defining transposition intervals



by means of pulse width modulation, and means responsive to impact on the keyboard.

3,836,910

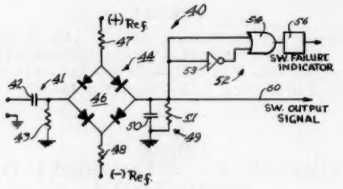
SOLID STATE PHASE OUTPUT SWITCH WITH NOISE IMMUNITY AND DIAGNOSTIC CAPABILITIES

Victor M. Bernin, Mt. Prospect, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 27, 1973, Ser. No. 345,300

Int. Cl. H04l *15/06*

U.S. Cl. 340—365 L **11 Claims**



The embodiment of the invention disclosed herein is directed to a solid state switch having noise detection and diagnostic capabilities for use in switching systems. The switch includes first and second closed loop magnetic paths which are alternately rendered magnetically saturated and unsaturated so that a common phase signal from the associated drive and sense lines can be obtained at all times. Upon sensing the absence of a signal of either phase, automatic triggering means are provided to indicate the failure of operation of the switch.

3,836,911

CODING ARRANGEMENT FOR FIBER OPTIC DIGITAL DISPLAY DEVICE

Richard D. Gibson, Wilbraham, and Robert D. Whelan, West Springfield, both of Mass., assignors to General Instrument Corporation, Newark, N.J.

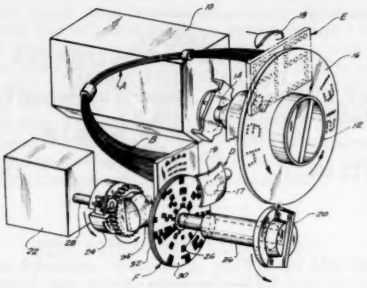
Filed July 16, 1973, Ser. No. 379,212

Int. Cl. G08b *5/36*

U.S. Cl. 340—380 **13 Claims**

A display device utilizes a fiber optic bundle having a light input end and a light output end. The light input end is divided into a plurality of distinct groups of one or more fibers, the groups being arranged generally radially in a relatively narrow sector of a circle. The fibers at the light output end are arranged in an indicia producing matrix. Means are provided for illuminating the light input end of the bundle and masking means are interposed between the input end and the illuminating means. The masking means has a plurality of masks

thereon, each of which is operative in a circle sector substantially the same shape as the input group sector. The mask means are movable to bring a selected one of the masks into position to block or expose certain groups of fibers in such a way as to form representations of different indicia at the output end.



The first embodiment has a fiber coding arrangement composed of ten groups of fibers arranged vertically at the input end and in a figure 8 matrix at the output end. In the second embodiment the arrangement has twenty groups of fibers arranged in two even vertical columns at the input end and arranged in a matrix consisting of three rows intersecting three columns at the output end.

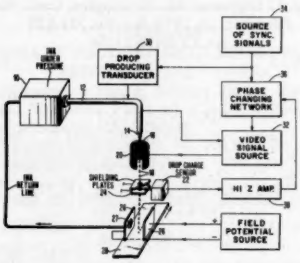
ERRATA

For Classes 343—5, 343—6, 343—7, 343—8, 343—14, 343—18, 343—100, 343—113, 343—208— 343—792, 343—795, 343—815, 343—854 and 313—881 see: Patents Nos. 3,836,960 thru 3,836,979

3,836,912
DROP CHARGE SENSING APPARATUS FOR AN INK JET PRINTING SYSTEM

John Ghougasian, Mahopac, N.Y.; Jon Hart, Cambridge, Mass.; Hans Yohanan Juliusburger, Putnam Valley, N.Y., and Paul Lowy, Peekskill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 11, 1972, Ser. No. 313,913
Int. Cl. G01d *15/18*
U.S. Cl. 346—75 **3 Claims**

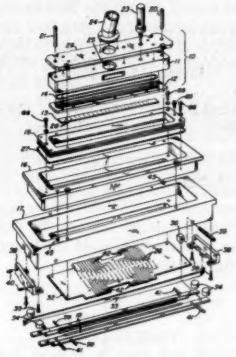


An inductive charge sensing device is disclosed in accordance with the teachings of the present invention for use with an ink jet printing system wherein ink under pressure is applied to a nozzle and ink emitted by the nozzle thereafter breaks up into a series of drops which are electrostatically charged and subsequently deflected in order to achieve controlled printing upon a recording surface moved in front of said apparatus. The charging and deflection of individual droplets is effected under control of an applied video signal. In order for the proper information to be recorded, the charging and deflection operation must be performed in precise synchronization with the ink droplet formation. As droplets are emitted from the nozzle, the charge sensor detects charges impressed on said droplets passing adjacent to but in non-impinging relationship with said sensor and a signal is developed which may be used to control an electrical or electromechanical drop forming means associated with said nozzle and ink supply.

3,836,913
RECORDING HEAD FOR A JET ARRAY RECORDER

Mackenzie Burnett; Cyrus T. Brady, both of Dayton; Peter L. Duffield, Kettering, and Philip H. Houser, Chillicothe, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Dec. 20, 1972, Ser. No. 317,075
Int. Cl. G01d *15/18*
U.S. Cl. 346—75 **8 Claims**



There is disclosed a recording head for a jet array recorder wherein the electrical components thereof are attached to a supporting yoke and the fluidic components thereof are suspended within the yoke. The primary fluidic components are separately assembled as a manifold subassembly and suspended inside a wobble plate. The wobble plate in turn is inserted inside an inner yoke, and rides within an O-ring which provides freedom of movement for vertical adjustment and tilting. Thus the manifold subassembly, which includes an orifice plate provided with one or more rows of jet orifices, may be accurately positioned with respect to the inner yoke. In final assembly the inner yoke is mounted inside the main supporting yoke to which the electrical components have been attached and aligned. A set of dowel pins is provided to insure alignment between the inner yoke and the outer yoke.

There is also disclosed means for supplying a flow of purging air through the recording head and a magnetic catcher mounting arrangement. The purging air is supplied to an air tube fitting which attaches to the manifold subassembly. In the completed assembly the air flows around the outside of the orifice plate and then exits the recording head by flowing outwardly through apertures in a charge ring plate which is fastened to the lower surface of the main yoke. The catchers are mounted below the charge ring plate by attraction to a set of permanent magnets which are set into the lower surface of the main yoke.

3,836,914

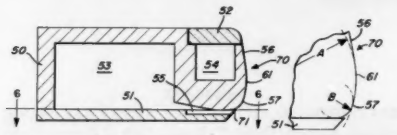
CATCHER FOR A JET DROP RECORDER

Peter L. Duffield, Kettering, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 317,073, Dec. 20, 1972, Pat. No. 3,777,307. This application July 20, 1973, Ser. No. 381,256The portion of the term of this patent subsequent to Dec. 4, 1990, has been disclaimed.

Int. Cl. G01d *15/18*

U.S. Cl. 346—75 2 Claims



There is disclosed an elongated catcher for use with a jet drop recorder which comprises a convex catching face and a recessed drop ingesting blade. The catcher is preferably grounded and positioned in spaced relation to an electrically charged deflection ribbon so as to create a static electrical field between the deflection ribbon and the face of the catcher. Drops of recording fluid which are deflected by the electrical field impact against the backwardly sloping upper portion of the catching face and then flow downwardly along the curving surface of the catching face to the upper surface of the blade. The captured recording fluid, which has preferably spread out into a continuous film, is then ingested into an internal cavity via a series of channels in the upper surface of the blade. To prevent build up of accumulated spray at the top of the catcher there is provided a porous upper surface which connects with a special compartment within the catcher. This compartment is separate from a larger main compartment into which is delivered the ink which is ingested by the blade. Each of these compartments has its own vacuum source for drawing off the liquid accumulated therein. In order to improve downward flow of recording liquid the lower portion of the catching face has a compound radius.

3,836,915

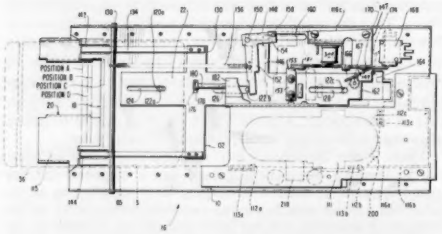
TIME RECORDER

Dominick Tringali, and John W. Dillard, both of Columbia, S.C., assignors to Universal Business Machines, Incorporated, Columbia, S.C.

Division of Ser. No. 239,124, March 29, 1972, Pat. No. 3,743,641. This application July 16, 1973, Ser. No. 379,492

Int. Cl. G01d *15/28*; G07c *1/18*

U.S. Cl. 346—104 12 Claims



A recorder for automatically printing a record receiver, such as a card, with actual time and elapsed time. The recorder includes a chute assembly with cooperating electronic elements for automatically positioning a card therein prior to selectively operating a print actuator assembly. The record receiver is initially positioned in said chute assembly by a manual effort and then drawn completely into said chute by automatically actuated gripping means whereby printing members impart a recording upon said record receiver. The chute assembly is provided with a mechanism to effect automatic ejection of the card subsequent to said recording operation.

3,836,916

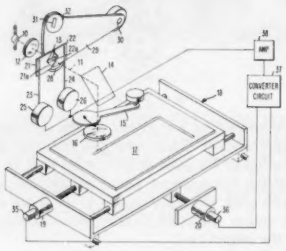
APPARATUS FOR EXPOSING LINES ON A PHOTOSENSITIVE SURFACE

John P. Wiley, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 26, 1973, Ser. No. 336,128

Int. Cl. G03b

U.S. Cl. 354—4 13 Claims



Apparatus for exposing lines on a photosensitive surface by means of relative movement between a light beam and the surface in which the quantity of radiant energy impinging upon the surface is controlled by movable, opaque blades that block variable portions of the light beam, with the blade movement being varied in accordance with the relative velocity between the beam and surface. A rectangular aperture is used to define the shape of the beam and the blades are oppositely moved along the direction of travel of the aperture to alter the quantity of light admitted therethrough. Several embodiments of this apparatus are disclosed and include blades having straight ends, variously shaped ends, and a variable iris diaphragm, all of which can controllably limit energy impingement upon the photosensitive surface.

3,836,917

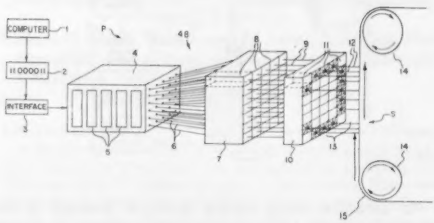
HIGH-SPEED NON-IMPACT LASER PRINTING APPARATUS

John L. Mee, 42 Highwood Rd., Farmington, Conn. 06032

Filed Apr. 16, 1973, Ser. No. 351,620

Int. Cl. B41b *21/14*

U.S. Cl. 354—5 14 Claims



A printing apparatus for laser recording of data in which a complete row of characters is simultaneously formed by a two

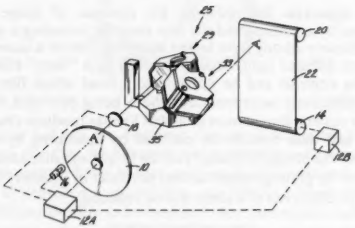
dimensional matrix of parallel diode lasers selectively activated to emit light in character shapes upon a photosensitive medium. The invention is adapted to provide rapid non-impact printout, in alphanumeric characters, of computer data. The system simultaneously imprints a complete row of characters on a medium transported through the system at high speed, and for each character in the row the system includes a decoder for converting data in computer binary code into individual signals each representing a single alphanumeric character. The individual signals are applied through a hard-wiring distribution circuit or core distribution circuit to selected diode lasers in the two dimensional matrix to cause those lasers to emit parallel beams of light in a pattern approximating the shape of the character. The emitted light beams directly strike a photosensitive medium, causing it to record the character shape. Spacing between rows of characters is controlled by a timing signal supplied by the means transporting the photosensitive medium through the system.

3,836,918

OPTICAL IMAGE ROTATING DEVICE

William Rosenstein, South Orange, and Thomas Allan Booth, Flanders, both of N.J., assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Dec. 19, 1973, Ser. No. 425,955
Int. Cl. B41b 21/18
U.S. Cl. 354—5 **4 Claims**



In the environment of a photocomposition machine normally projecting images across a column, with the lines "leaded" after each line is composed, this modification provides an image rotation to permit larger letters in longer text than could be obtained in the normal column width.

The image rotation is distortion-free by reason of a set of two roof mirrors in an angular relationship to provide the exact desired degree of rotation, which is normally 90°.

An enlarging lens, or curved mirror surface, is used to produce enlargment.

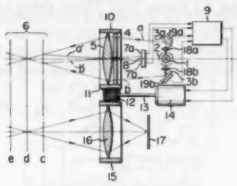
3,836,919

AUTOMATIC FOCUSING DEVICE FOR USE WITH A PHOTOGRAPHIC CAMERA

Seiichi Matsumoto, Tokyo; Kuzuya Hosoe, Kawasaki, and Noritaka Mochizuki, Zushi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 204,843, Dec. 6, 1971, abandoned. This application Dec. 8, 1972, Ser. No. 313,518
Claims priority, application Japan, Dec. 8, 1970, 45-108770; Dec. 28, 1970, 45-128420; Germany, Dec. 8, 1971, 2160901
Int. Cl. G03b 3/00
U.S. Cl. 95—44 C **32 Claims**

Disclosed is an automatic focusing device including a radiation source for projecting a radiant ray such as a light ray or the like to an object, light receiving elements for detecting the reflected radiant ray from the object, a chopper or a mirror for time-sharing the radiant ray into two projected beams, and a mechanism for arbitrarily varying the distance between the merging point of the two beams and the radiation source, whereby the distance to the object is optically and photoelectrically measured by utilizing the fact that the images resulting from the two projected beams, respectively, are superposed on each other at the surface of the light receiving elements



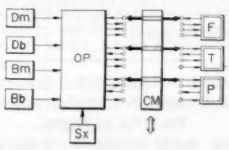
only when the merging point of the two projected beams lies on the object. Also disclosed are various arrangements for detachably mounting the said automatic focusing device or any other automatic focusing device on a photographic camera or the like.

3,836,920

EXPOSURE CONTROL SYSTEM FOR FLASH PHOTOGRAPHY

Takashi Uchiyama, Yokohama; Tetsuya Taguchi, Kawasaki, and Yukio Mashimo, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 15, 1973, Ser. No. 332,595
Claims priority, application Japan, Feb. 16, 1972, 47-16166
Int. Cl. G03b 7/16
U.S. Cl. 354—27 **7 Claims**



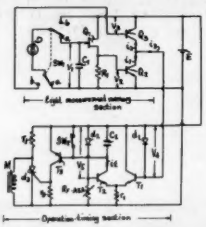
In the flash photography exposure control system disclosed, an illuminating device produce flash light quantity P for a main portion and subordinate portion of an object to be photographed. A shutter device opens for a time T and closes on the basis of the light from the illumination means. Distance measuring means measure the distance *Dm* to the main portion of the object. A diaphragm arrangement cooperates with the shutter device and produces a diaphragm value F for adjusting the exposure amount. A brightness measuring device measures the brightness Bm of the main portion and the brightness Bb of the subordinate portion of the object. Operating means adjust at least two of the following parameters: flash light quantity P, the opening time T of the shutter device, and the diaphragm value F of the diaphragm device determined by the distance obtained by the distance measuring means and brightness obtained by the brightness measuring means. The operating means thus produces a proper exposure which takes into account the natural light and flash light supplied to the main and subordinate portions of the objects.

3,836,921

CAMERA EYEPIECE LIGHT COMPENSATION ARRANGEMENT

Chiharu Mori, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1971, Ser. No. 140,512
Claims priority, application Japan, May 28, 1970, 45-45808
Int. Cl. G03b 7/08, 17/00; G01j 1/46
U.S. Cl. 354—31 16 Claims



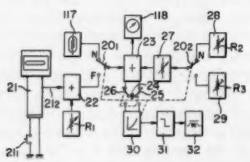
A camera having circuitry capable of compensating for light entering through an eyepiece of the camera, so that the exposures will not be rendered inaccurate due to light entering through the eyepiece. The circuitry is capable of measuring the light entering through the objective of the camera as well as through the eyepiece of the camera, and the total of the light entering through the objective and eyepiece is converted into an electrical quantity in the form of a collector current of a transistor. Also, the circuitry measures only the light entering through the eyepiece and converts this light into an electrical quantity in the form of the collector current of a second transistor. The electrical circuitry has conductors which direct these collector currents to a common junction to which there is connected an output conductor for conducting an electrical quantity in the form of an output current equal to the difference between the collector current corresponding to the total light entering through the objective and eyepiece and the collector current corresponding to the light entering only through the eyepiece, so that in this way the output current corresponds only to the light entering through the objective and can be used in the determination of the extent to which film in the camera is exposed.

3,836,922

EXPOSURE SETTING DEVICE FOR FLASH PHOTOGRAPHING

Goro Hasegawa; Soichi Nakamoto; Yoshiyuki Takishima; Yukio Mashimo; Tatsuya Taguchi, all of Tokyo; Zenzo Nakamura, Saitama, and Tetsuya Taguchi, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed June 11, 1973, Ser. No. 368,468
Claims priority, application Japan, June 15, 1972, 47-59686
Int. Cl. G03b 7/08
U.S. Cl. 354—51 12 Claims



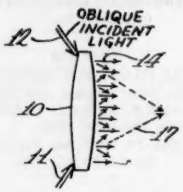
In the apparatus disclosed, a camera includes facilities for providing electrical values corresponding to the diaphragm opening, film sensitivity, ambient measured light, and object focusing distance. When the camera is set in its available-light photography mode, an operating circuit utilizes the electrical values for diaphragm openings, film sensitivity, and ambient light to time a shutter. In the flash mode, the operating circuit combines the electrical values of the flash power with the film sensitivity and object focusing distance to adjust the required diaphragm opening while timing the shutter for a preset timing interval.

3,836,923

CONTRAST CONTROL APPARATUS FOR A CAMERA

Christopher B. Malick, 2342½ Broadway, Boulder, Colo. 80302

Filed Nov. 15, 1971, Ser. No. 198,672
Int. Cl. G03b 27/72
U.S. Cl. 354—32 18 Claims



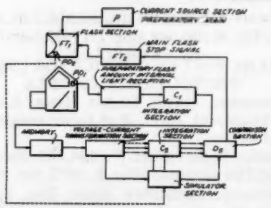
An apparatus for reducing the contrast of image light received by a camera and the film therefor including a device for obliquely adding light to the resolving lens of a camera to produce diffused light through the lens by a "flare" effect so that the contrast can be reduced to a level which films can more effectively accommodate; there being provided a control for varying the amount of added light to produce this flare effect and thus control the contrast by increasing by equal amounts the absolute intensity of the bright and dim areas of a scene to be photographed so that the ratio of intensity of the bright to dim areas of a scene will be reduced.

3,836,924

FLASH CONTROL SYSTEMS FOR CAMERAS

Masahiro Kawasaki, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Itabashi-ku, Tokyo-to, Japan

Filed Sept. 19, 1973, Ser. No. 398,807
Claims priority, application Japan, Sept. 21, 1972, 47-94930
Int. Cl. G03b 15/03; H05b 41/36
U.S. Cl. 354—33 14 Claims



A control system for flash illumination of a camera which operates with preparatory and main flash illumination. The camera has an internal photosensitive element which receives only the light created during the preparatory flash illumination and converts this light into a corresponding electrical quantity. A suitable preparatory electrical circuit receives this latter electrical quantity and converts it into a corresponding current. A flash terminating control is provided for automatically terminating the main flash operation, and between this latter

control and the preparatory electrical circuit there is a main electrical circuit which receives one input in the form of the current provided by the preparatory electrical circuit, so as to utilize this one input to determine when to actuate the flash terminating control. A simulating electrical circuit is electrically connected with the main electrical circuit to provide a signal simulating that which would be provided if the main flash illumination were received by the internal photosensitive element, and by way of this simulated signal it is possible to provide a second input to be combined together with the above first input to provide a proper determination of the instant when the main flash will be terminated.

3,836,925

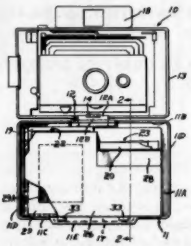
HOLDER FOR PROCESSED PHOTOGRAPHS

Vincas P. Steponaitis, 60 Ocean St., Dorchester, Mass. 02124

Filed June 23, 1972, Ser. No. 265,593

Int. Cl. G03d *3/00*

U.S. Cl. 354—75 **2 Claims**



Picture holders are disclosed for use in conjunction with cameras the film for which is self-processing with respect to each exposure. Each holder contains a compartment subdivided to provide a series of slots, one for each processed picture. Where the film to be used includes discardable materials, the holders have a second compartment to receive them. In one embodiment of the invention, the holders are attachable to the person. Where the cameras have a cover hingedly connected thereto, the holders are detachably secured within the opened covers.

3,836,926

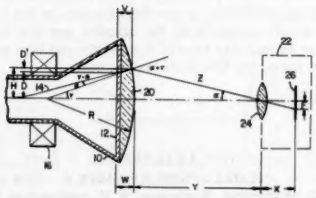
PIN CUSHION DISTORTION CORRECTION LENS

Paul N. Seitz, Milpitas; Gerald C. Cox, Fremont, and Rolf D. Kahle, Saratoga, all of Calif., assignors to Quantor Corporation, Cupertino, Calif.

Continuation-in-part of Ser. No. 59,614, July 30, 1970, abandoned. This application Mar. 27, 1972, Ser. No. 238,549

Int. Cl. G03b *29/00*

U.S. Cl. 95—12 **2 Claims**



A pin cushion distortion correction system for magnetically deflected cathode ray tubes in which a planoconvex lens adapted to optically correct for pin cushion distortion is disposed in front of the cathode ray tube. The curvature of the lens is suitably selected to impart greater optical gain in the center and lesser optical gain towards the edges so as to complement, and thereby cancel or correct, the pin cushion distortion.

3,836,927

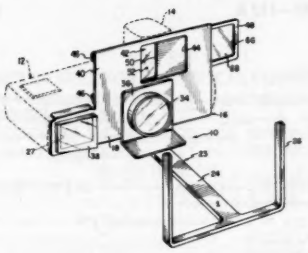
CLOSE-UP FLASH CAMERA ATTACHMENT

Lester A. Dine, 145 Grist Mill Ln., Great Neck, and Edgar S. Lemmey, 73 Lester Ave., Freeport, both of N.Y.

Filed Dec. 22, 1972, Ser. No. 317,836

Int. Cl. G03b *17/56*

U.S. Cl. 354—80 **1 Claim**



A flash camera attachment for close-up use including a mounting member attachable to the camera so that a variable size aperture is positioned between the camera flash and the subject. An interchangeable locator unit locates the subject to be photographed at a predetermined distance and modifies the focal length of the camera to the same distance. A legend is associated with each locator unit and corresponding indicia is provided on the variable size aperture to indicate the extent to which the aperture is opened to permit an appropriate amount of the flash light to be transmitted.

3,836,928

APPARATUS FOR BRAKING AND ARRESTING INDEXIBLE CARRIERS FOR FILTERS OR THE LIKE

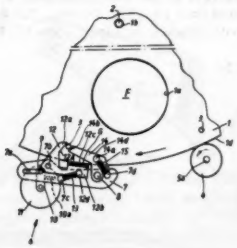
Boris Koleff, Munich, and Erich Nagel, Anzing, both of Germany, assignors to AGFA Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 1, 1973, Ser. No. 384,400

Claims priority, application Germany, Aug. 3, 1972, 2238193

Int. Cl. G03b *33/08*

U.S. Cl. 354—100 **14 Claims**



Photographic apparatus wherein a disk which carries several filters is indexible by a friction wheel to move a selected filter to a predetermined position. The disk is braked by a device wherein a pivotable holder supports a bell crank lever one arm of which constitutes a feeler and another arm of

which constitutes a braking element for the disk. The holder is pivotable by an electromagnet to move the feeler into the path of projections provided on the disk adjacent to the filters. When an oncoming projection strokes against the feeler, the bell crank lever pivots relative to the holder and moves the braking element into frictional engagement with the peripheral surface of the disk.

3,836,929

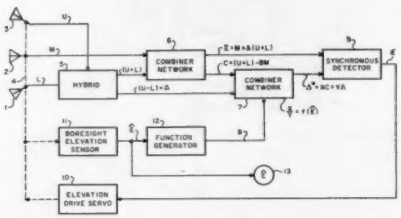
LOW ANGLE RADIO DIRECTION FINDING

Warren D. White, Northport, N.Y., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Mar. 15, 1973, Ser. No. 341,547

Int. Cl. G01s *3/06*

U.S. Cl. 343—113 R **5 Claims**



A radio direction finder system with a beam-forming antenna capable of accurate operation with its boresight axis nearly parallel to a reflecting surface, by automatically directing a pattern null toward the image of a radiating target whereby signals received indirectly from the target by reflection from the surface are rejected.

3,836,930

Patent Not Issued For This Number

3,836,931

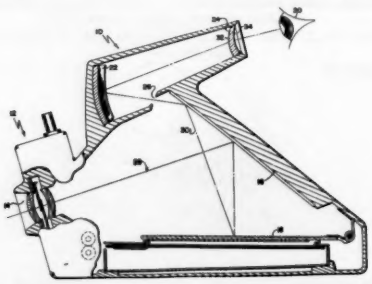
EYE LENS IN A SINGLE LENS REFLEX CAMERA VIEWFINDER PROVIDING FIELD TILT COMPENSATION

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 197,851, Nov. 11, 1971, Pat. No. 3,810,221. This application Nov. 7, 1973, Ser. No. 413,658

Int. Cl. G03b *19/12*

U.S. Cl. 354—155 **9 Claims**



A special eye lens in a viewfinder for a reflex camera compensates for field tilt in a virtual image, thereby minimizing the depth accommodation required of an observer's eye to focus the virtual image at top and bottom. The field tilt stems from an oblique orientation of the axis of the viewfinder at its incidence with a focusing screen in the reflex camera. To compensate for it, a special refracting surface is formed on the eye lens. The ophthalmic power of the special refracting surface varies with its vertical distance from the axis, causing the power of the eye lens to vary accordingly. A polynomial of at least the third order best describes the three-dimensional shape of the special refracting surface having mirror symmetry, but not rotational symmetry.

3,836,932

PHOTOGRAPHIC CAMERA WITH INTERCHANGEABLE FILM SYSTEM

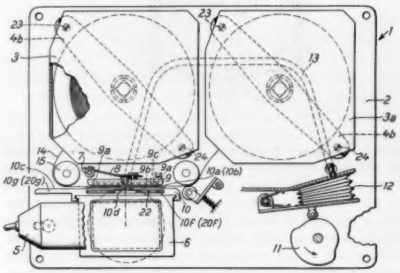
Gunter Lohl, Wetzlar; Wolfgang Schneider, Braunfels; Heinz Schroder, Steindorf, and Rudolf Noack, Wetzlar, all of Germany, assignors to Firma Ernst Leitz GmbH, Wetzlar, Germany

Filed Nov. 9, 1973, Ser. No. 414,232

Claims priority, application Germany, Nov. 14, 1972, 2255661

Int. Cl. G03b *1/50, 27/60, 19/00*

U.S. Cl. 354—159 **22 Claims**



A photographic camera having a film-changing and multicircuit vacuum system, especially for application in process photography. The improvements include:

- guides for the use of arbitrary film widths provided in the camera;
- a film plate to accommodate the seating of the largest anticipated film width and having at least two centering pins for each film container;
- a couple for each film container centered between the centering pins forming a connection between the camera drive and the film container for film transport; and
- interchangeable bridging members located on the centering pins which couple both the couples and the film containers so that any kind of film width and film container which fits on the film plate may be used.

3,836,933

COLLAPSIBLE CAMERA

William T. Hochreiter, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

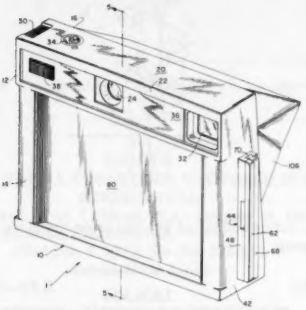
Filed July 30, 1973, Ser. No. 383,636

Int. Cl. G03b *17/04*

U.S. Cl. 95—11 R **25 Claims**

A large-format camera has a relatively thin, vertically oriented housing that includes a lower body section for receiv-

ing film with its exposure surface facing rearwardly and an upper head section that contains a forwardly facing objective lens. Behind the lens, a sloped upper mirror deflects the image rays downwardly to an oppositely sloped lower mirror, which then deflects those rays forwardly to locate the focused image in coincidence with the film plane. One or both of the mirrors may extend partially into the housing, but in their operative positions the major portions of both mirrors project rearwardly beyond the housing and are covered by a substantially



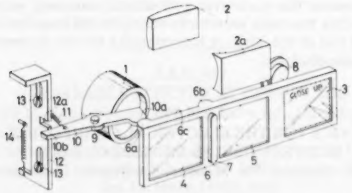
conforming enclosure. To render the whole camera thinner and more compact when not in use, the mirrors are coupled to the housing by a collapsible linkage arrangement and the mirror enclosure is foldable, thereby permitting movement of both the mirrors and the enclosure to respective inoperative positions close to the housing. The head section of the housing permits convenient location of interacting camera mechanisms in close proximity to one another, while the external configuration of the camera provides a comfortable grip and a stable holding position for the user.

3,836,934

LENS ASSEMBLY FOR PHOTOGRAPHING AT NEAR OR CLOSE DISTANCE

Shogo Suzuki, Tahara, and Maki Yamashita, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 29, 1973, Ser. No. 420,131
Claims priority, application Japan, Dec. 27, 1972, 48-4798
Int. Cl. G03b *13/14*
U.S. Cl. 354—197 **6 Claims**



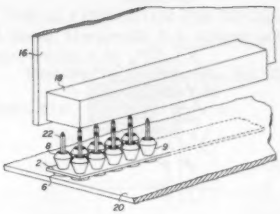
A finder parallax correction lens capable of giving a visual indication, a supplementary lens and a glass protector for the main taking lens are aligned in a planar arrangement and movably built in the camera. When the supplementary lens for photographing subjects at near or close distances is placed in front of the main taking lens with its optical axis in alignment with that of the taking lens, the correction lens is set in position for the finder optical system, visually indicating that it is so positioned, with the glass protector brought to its retracted position. A lock mechanism is further provided which permits the shutter to be tripped only when the lenses and glass protector are set in correct photographing positions respectively and which otherwise locks the shutter against tripping.

3,836,935

MOISTURE SEAL FOR ELECTRICAL CONNECTOR

Frederick W. Johnson, Cedar Rapids, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Division of Ser. No. 198,920, Nov. 15, 1971, Pat. No. 3,781,764. This application June 1, 1973, Ser. No. 365,880
Int. Cl. H05k *1/02*
U.S. Cl. 339—17 LM **6 Claims**



Disclosed is a printed circuit board interconnect system having moisture seal means for precluding the formation of a moisture film between electrical contacts. The seal means comprises a resilient seal strip having one or more integral hollow seals disposed on either side thereof, each hollow seal surrounding a male connecting pin of the system and being compressed between printed circuit boards that are electrically connected.

3,836,936

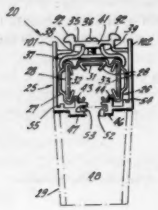
ELECTRIFIED DUCT AND FITTINGS THEREFOR

Ralph C. Clement, Bellefontaine, Ohio, assignor to I-T-E Imperial Corporation, Spring House, Pa.

Filed Nov. 24, 1972, Ser. No. 308,975
Int. Cl. H01r *9/00*
U.S. Cl. 339—21 R **12 Claims**

A stylized electrical duct is formed by inserting a conventional duct with a formed sheet metal casing inside of an extruded housing. Internal formations of the extruded housing are utilized to maintain polarity between duct section and to properly position the housing and casing relative to each

other. External formations of the extruded housing are used to mount and maintain polarity for appliances, and to mount a



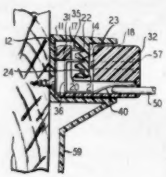
strip providing a support for a ceiling which engages the latter from below.

3,836,937

POWER DISTRIBUTION SYSTEM FOR CONVENIENCE OUTLETS

Anthony Carl Donato, 529 Wychwood Rd., Westfield, N.J. 07090

Filed July 9, 1973, Ser. No. 377,335
Int. Cl. H01r *9/00*
U.S. Cl. 339—21 R **9 Claims**



A convenience outlet system is disclosed by which electric power is distributed. The system comprises a slideway, including a continuous track, and one or more outlet components or adapters which are selectively located by being moveably positioned along the track. The track houses a plurality of independent electrical strip conductors. The hazard of shock is prevented by shielding the conductors from direct access while simultaneously permitting direct electrical contact between the conductors and the moveable outlet components due to the system geometry.

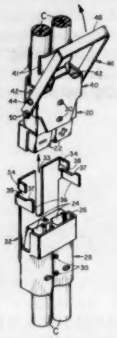
3,836,938

SAFETY ELECTRICAL PLUG RELEASE MECHANISM

James H. Barrett, Jr., 3863 Surrey Rd., Toledo, Ohio 43615, and Lee R. Marcussen, Toledo, Ohio, assignors to said Barrett, by said Marcussen

Filed Sept. 13, 1972, Ser. No. 288,522
Int. Cl. H01r *13/54*
U.S. Cl. 339—45 R **24 Claims**

A lever operated safety connect-and-disconnect mechanism for a pair of telescopic electrical cable terminal connectors comprising a guide means attached to one of the connectors projecting beyond the entrance thereof and having a pair of slotted flanges and a lever means connected and pivoted to the other connector having a pair of trunnion pins for fitting into the slots of the flanges of the guide means, whereby oscillation of the lever moves the two connectors into and out of engagement. The improvement in this mechanism resides in means for preventing jamming, over-riding, and breakage of the connectors and insuring their operation by providing stops,



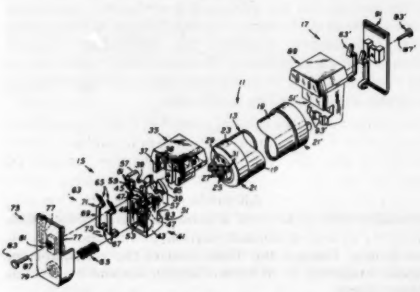
wedges and/or additional pin means on the guide means and lever means.

3,836,939

FLUORESCENT LIGHTING ASSEMBLY

Wade E. Barre, Warren, and Robert S. Orbanic, East Warren, both of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Mar. 5, 1973, Ser. No. 337,949
Int. Cl. H01r *33/08*
U.S. Cl. 339—56 **17 Claims**



A fluorescent lighting assembly is disclosed which comprises a fluorescent lamp and a pair of socket members. The first of said socket members has a base member, a movable member, a backcover, and at least two pliable metallic contacts positioned therein. A resilient means positioned substantially between the backcover and movable member permits this member rotatable movement during initial insertion by a terminal end of the lamp. A base member for the fluorescent lamp is also disclosed.

3,836,940

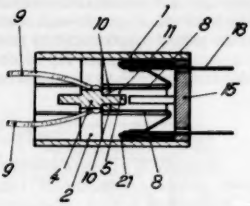
DEVICE FOR THE ELECTRICAL CONNECTION BETWEEN CABLES AND RIBBON-LIKE

Giuseppe Codrino, Via Stazione, Quattordio (Alessandria), Italy

Filed Jan. 15, 1973, Ser. No. 323,930
Claims priority, application Italy, May 9, 1972, 24105-A/72
Int. Cl. H01r *13/54, 13/64*
U.S. Cl. 339—91 R **4 Claims**

Device for the electrical connection between cables and ribbon-like flexible conductors, and more particularly a connect-

ing device, adapted to perform the electrical continuity between the traditional-type cables and ribbon-like flexible conductors.

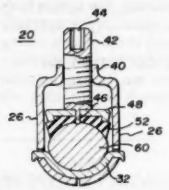


3,836,941

ELECTRICAL CONNECTOR WITH RESILIENT PRESSURE PAD

Hyman Izraeli, West Caldwell, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed July 5, 1973, Ser. No. 376,601
Int. Cl. H01r *11/20*
U.S. Cl. 339—95 R **10 Claims**



The connector of the present invention is arranged to couple an electrical conductor to a terminal point and to compensate for the different coefficients of expansion between the connector and the conductor. A resilient pressure pad is added to the normal metallic pressure plate of a mechanically operated connector to force a conductor, placed within the connector, against a contact portion of the connector regardless of changes in the dimensions of the conductor and connector resulting from thermal expansion and contraction of the dissimilar metals. The connector consists of a tubular body for the receipt therein of an electrical conductor and a pressure plate, operated by a mechanical screw, to exert connecting pressure between the conductor and the connector body. A resilient pad member, added to the pressure plate, permits the connector to accommodate dimensional changes, while the coupling between the pressure plate and resilient pad member limits tightening of the connector to prevent destruction of the resilient pad member.

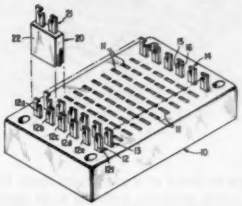
3,836,942

SEPARABLE ELECTRICAL CONNECTOR

Robert H. Knickerbocker, 29 Westmore Rd., Cheshire, Conn. 06795

Continuation-in-part of Ser. No. 277,165, Aug. 2, 1972, abandoned. This application Apr. 13, 1973, Ser. No. 350,915
Int. Cl. H01r *31/08, 9/08*
U.S. Cl. 339—97 R **10 Claims**

There is disclosed a separable electrical connector which permits a large number of additional electrical conductors to be connected to a terminal block containing clip-type electrical connectors without increasing the size of the block. The separable connector comprises a flat, elongate, electrically conductive element and a dielectric retaining member for holding the electrically conductive element in contact with the upper portions of laterally adjacent electrical connectors which project upwardly from a terminal block. The conductive element comprises a flat base portion and at least one, e.g., one or two, pair of opposing contact fingers which project upwardly from the base portion and are integral with the base portion. The adjacent edge portions of the contact fingers are adapted to receive an electrical conductor therebetween. The retaining member comprises a casing which encloses a portion of the electrically conductive element. The top portions of the opposing contact fingers project above the casing so that an electrical conductor may be inserted between the opposing fingers.

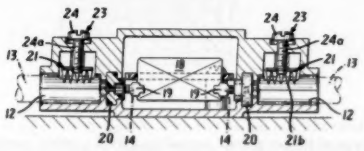


3,836,943

ELECTRICAL CONNECTOR FOR COAXIAL CABLE

Martin S. Horak, Morganville, N.J., assignor to Gamco Industries, Inc., Roselle, N.J.

Filed May 29, 1973, Ser. No. 364,725
Int. Cl. H01r *9/08*
U.S. Cl. 339—97 P **6 Claims**



An electrical connector for a coaxial cable. The connector body contains a longitudinal bore which receives one end of the coaxial cable. Teeth which face inwardly towards the bore are slidably movable in the connector body at right angles to the longitudinal bore and are driven into the cable to make contact with the outer conductor of the cable by the rotation of a screw which is operatively connected to the teeth.

3,836,944

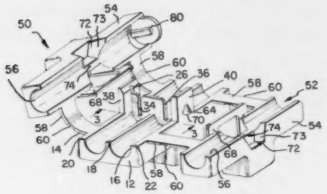
SOLDERLESS CONNECTOR FOR INSULATED WIRES

Gustaf Rudolph Lawson, Willingboro, N.J., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 262,801, June 14, 1972, abandoned. This application Aug. 31, 1973, Ser. No. 393,541
Int. Cl. H01r *9/08*
U.S. Cl. 339—99 R **6 Claims**

A solderless insulated wire connector is disclosed which is formed of a unitary piece of dielectric material. The solderless connector includes a centrally disposed resilient electrical contact member which includes a pair of wire gripping notches, and a pair of flexibly hinged, self-locking cover portions for completely enclosing the contact member to complete a solderless connection. The contact member is mounted in a slot which is elongated to facilitate expansion of

the contact member as wires are inserted into the wire gripping notches. The flexible hinges secured to the cover portions include sections of reduced thickness which cause the

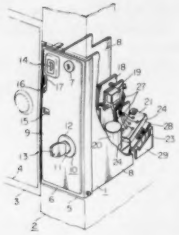


flexible hinges to bend at a particular spot, facilitating alignment of the cover portions with the base portions of the solderless connector structure.

3,836,945
RENTAL LOCKER SYSTEM

Yoshio Kinoshita, and Mitsuhiro Akamatsu, both of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Hyogo-ken, Japan

Filed Apr. 2, 1973, Ser. No. 346,881
Claims priority, application Japan, Apr. 13, 1972, 47-43542
Int. Cl. H01r *13/08*
U.S. Cl. 339—119 R **5 Claims**



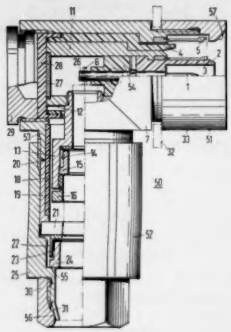
A rental locker system including a lock control mechanism freely removable from its installed position thereon and comprising an electrical control means supported by a support means in the lock control mechanism, a required number of electrical contact means provided on a contact board secured stationarily on a structural part of the rental locker, and a corresponding number of electrical contacting means provided on a contact board secured to the lock control mechanism thereby to be connected with the electrical control means included therein, each of the electrical contacting means on one of the two contact boards being made reciprocative and urged toward a corresponding contact means on the other contact board, whereby a good electrical connection is always assured between the electrical control means and electrical members in the rental locker through the electrical contacting means when the lock control mechanism is inserted into its position.

3,836,946
COAXIAL CONNECTOR

Alfons Geiger, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 22, 1973, Ser. No. 343,839
Claims priority, application Germany, Mar. 30, 1972, 2215757
Int. Cl. H01r *17/04*
U.S. Cl. 339—177 R **3 Claims**

A coaxial connector for coaxial cables which, in addition to an outer conductor and an inner conductor, comprise a screen surrounding the outer conductor, and wherein a section provided for the connection with a cable and a section provided for connection with another connection member of a connector part are inclined with respect to each other. The screen is continued in the area of the connector by means of a contact side section comprising a threaded cap which closes the section at the side facing away from the contact side and a cable

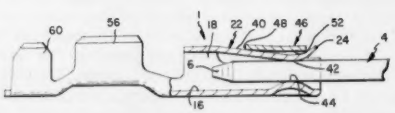


side section which is screwed onto a stud shaped rim of the contact side screen case. The contact side sections of an outer conductor casing which are supported by other stages and which are supported at the screen casing of the inner conductor, and insulation members required for electric insulation in the radial direction are inserted into the contact side screen casing section through the opening which is closed by the threaded cap.

3,836,947
ELECTRICAL CONTACT RECEPTACLE WITH HELPER SPRING

Marvin Leo Yeager, Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 23, 1973, Ser. No. 335,263
Int. Cl. H01r *13/16*
U.S. Cl. 339—259 R **6 Claims**



The present invention relates to a female electrical receptacle for receiving and making electrical contact with a male electrical terminal. One side of the receptacle is in the form of a resilient leaf spring folded about a side margin thereof which is integral with the receptacle. The leaf spring resiliently engages against a male terminal received in the receptacle to make an electrical connection therewith. The receptacle is further provided with an elongated helper spring folded about a side margin thereof which is integral with the receptacle. The helper spring is shorter than the leaf spring and has a free end which overlies the leaf spring. Upon insertion of a male terminal into the receptacle, the male terminal will resiliently deflect the leaf spring contact against the helper spring. The helper spring thereby serves to stiffen the spring contact to provide a relatively high gripping pressure on the male terminals. The spring contact further is deflected by the male terminal into engagement with the helper spring along its folded edge margin which resists the tendency of the spring contact to unfold and further serves to limit the deflection of the leaf

spring to prevent deformation thereof. The helper spring also distributes the stresses along a substantial length of the leaf spring to prevent deformation thereof due to overstressing. In a modification, the receptacle may be provided with a folded tab portion overlying the free end of the spring contact against which the free end of the contact will engage to limit the deflection thereof when a male terminal is received in the receptacle.

3,836,948

ECHO SOUNDING TECHNIQUE

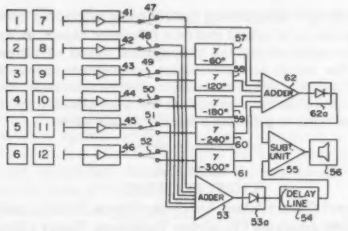
Christoph Benedikt Burckhardt, Muttenz; Pierre Andre Grandchamp, Arlesheim, both of Switzerland, and Heinz Hoffmann, Grenzach, Germany, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Filed Feb. 7, 1973, Ser. No. 330,364

Claims priority, application France, Feb. 11, 1972, 72.2032; Dec. 7, 1972, 72.17818

Int. Cl. G01s *9/66, 7/66*

U.S. Cl. 340—1 R **16 Claims**



An ultrasonic echo sounding technique for reducing echoes from reflectors outside the field of interest comprising: a substantially annular ultrasonic transducer assembly having a plurality of equally sized segmental transducer elements whose radiation surfaces are inclined towards the annular axis; a transmitter with a generator; phase shifting means for driving selected transducer elements with signals having relative phase shift; transmitter switches for optionally switching the aforementioned apparatus between generator and transducer to produce first and second waves; a receiver with a first and second adder; phase rotation means connected with said second adder; receiver switches operated in synchronism with the transmitter switches for optionally switching the transducer elements between the phase rotation means and first adder; rectifier means for rectifying the outputs of the adders; a delay line for delaying signals from the first adder; and, subtraction means for taking the difference of the first and second adder outputs and displaying the results.

3,836,949

DEVICE FOR THE LOCALISATION OF AN OBJECT

Rolf Otto Torbjorn Ergon, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

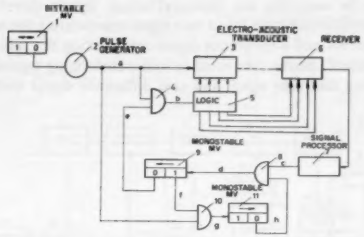
Filed Mar. 27, 1972, Ser. No. 238,224

Claims priority, application Sweden, Apr. 2, 1971, 4303/71

Int. Cl. G01s *9/66*

U.S. Cl. 340—3 R **6 Claims**

An improved echo-sounding device is disclosed which is suitable for use in an acoustic proximity fuse of an underwater weapon. The transmitter of the device is controlled so that predetermined electrical pulse sequences, including at least two different types of pulses, which are produced by the transmitter and then converted into acoustic signals transmitted into the surrounding medium, are varied in response to electrical echo-pulses registered by a receiver and converted from reflected acoustic signals, the receiver being arranged to register only pulses of a type corresponding to the last generated pulse. By varying the predetermined pulse sequence to generate a pulse of the same type as last generated and



thereafter continuing with the same sequence as before, only objects inside the range of action of the weapon can cause continuously registered echo pulses.

3,836,950

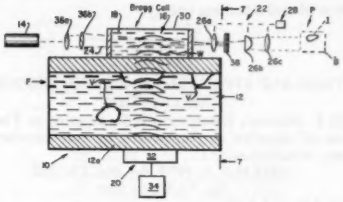
ACOUSTO-OPTICAL MULTI-CONSTITUENT FLOW MONITORING METHOD AND APPARATUS

Pravin G. Bhuta; Robert L. Johnson; Douglas J. Graham, and Robert Aprahamian, all of Los Angeles, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 16,744, March 5, 1970, abandoned. This application July 26, 1972, Ser. No. 275,175

Int. Cl. G01v *13/00*

U.S. Cl. 340—5 H **6 Claims**



An acousto-optical method and apparatus for monitoring individual constituents of differing acoustical transparency in a multi-constituent flow through a conduit. The conduit is acoustically coupled to an external acoustic source of fixed frequency and an external acoustic wave transmission medium in a manner such that acoustic wave energy from the source is transmitted laterally through a section of the conduit into the acoustic medium to produce within the medium distorted acoustic waves containing information representing each constituent present within the conduit section. This acoustic information is transformed to equivalent light information by a light-sound wave interaction yielding a light sideband which may be optically processed to image the constituents or converted to an electrical output representing the constituents.

3,836,951

HETERODYNE AUTOCORRELATION GUIDANCE SYSTEM

Keith E. Geren; Milton D. Papineau, and Claude C. Routh, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

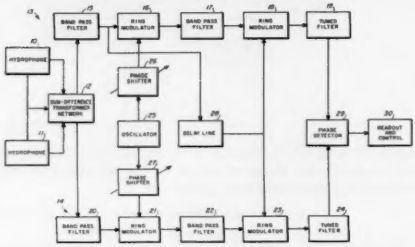
Filed May 5, 1960, Ser. No. 20,225

Int. Cl. G01s *3/80*

U.S. Cl. 340—6 R **15 Claims**

1. In a guidance system adapted to sense incoming energy and ascertain the direction thereof comprising in combination

a first means for receiving incoming radiant energy and producing a first electrical output signal proportional thereto, a second means for receiving incoming radiant energy and producing a second electrical output signal proportional thereto, means coupled to said first and second receiving means for accepting the electrical output signals therefrom and transforming same into a sum signal representing the addition thereof and a difference signal representing the subtraction thereof, means connected to said transforming means for receiving said sum signal and said difference signal and for



converting same into a pair of electrical signals having identical fixed frequencies and a phase relationship in accordance with the relative left and right direction of said incoming energy, means connected to said sum and difference signal converting means for comparing the phase relationship between said identical fixed frequency signals and producing an output signal in accordance therewith, and readout means coupled to said relative phase comparing means for indicating said relative phase relationship in terms of said relative left and right direction of said incoming energy.

3,836,952

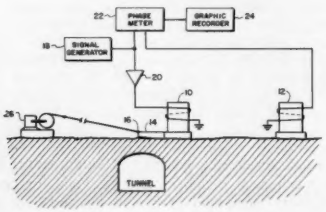
METHOD AND APPARATUS FOR RAPID SUBSURFACE EXPLORATION

Ronald F. Johnson, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 3, 1972, Ser. No. 231,760

Int. Cl. G01v *1/00*

U.S. Cl. 340—15.5 CP **4 Claims**



Exploring a selected zone of the earth to a shallow depth for a tunnel excavation, hollow, or other anomaly, without digging, which includes the use of a transmitter electro-seismic transducer and at least one receiver electro-seismic transducer for causing seismic energy to transmit from transmitter transducer to receiver transducer, through the ground in the selected zone, and examining for any unusual deviation in the phase angle difference between energy at the emitting transducer and energy at the receiving transducer as the span between transducers is displaced or as the span length is changed.

3,836,953

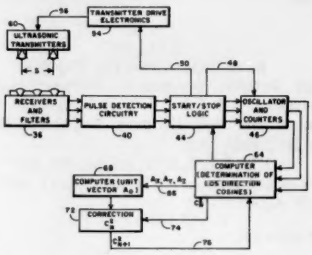
PROPAGATION SPEED DETERMINING APPARATUS

Donald J. Rotier, St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 30, 1973, Ser. No. 346,560

Int. Cl. G01s *5/18*

U.S. Cl. 340—16 R **11 Claims**



Aline-of-sight determining system using ultrasonic transducers mounted on a helmet and on a reference object, including means for determining the propagation speed of ultrasonic signals. The means for determining propagation speed uses a known distance between transducers and compares the known distance with a distance calculated using an assumed propagation speed value to generate a more accurate value.

3,836,954

LIGHT FIXTURES

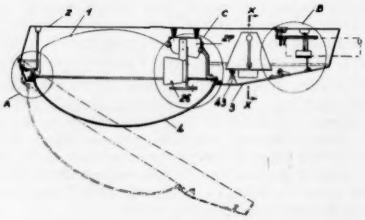
Marie Henri Hubert Adam, Lorey-par-Bayon, France, assignor to Societe Anonyme l'Eclairage Technique, Nancy (Meurthe et Moselle), France

Division of Ser. No. 219,740, Jan. 21, 1972. This application Mar. 8, 1973, Ser. No. 339,274

Claims priority, application France, Oct. 1, 1971, 71.35397

Int. Cl. F21s *13/10, 1/10*

U.S. Cl. 240—25 **1 Claim**



The present light fixture has a body with an upper portion to which is attached a bowl, a reflector, a light and a power supply gear and includes means which is movable within and detachable from said upper portion and support said power supply gear.

3,836,955

MOTOR VEHICLE SEAT BELT SAFETY SYSTEM

Larry F. Cracraft; David E. Houser, and Edward G. Whitaker, all of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

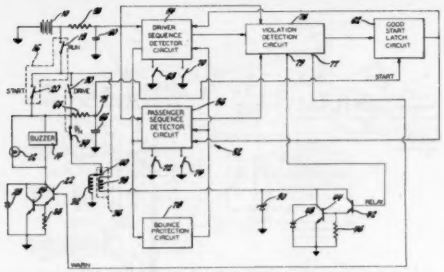
Filed Apr. 23, 1973, Ser. No. 353,598

Int. Cl. B60r *21/10*

U.S. Cl. 340—52 E **8 Claims**

A bipolar integrated circuit is disclosed which includes a sequence latch for detecting an improper sequential operation

of a seat switch and a seat belt switch for providing a violation signal which permits energization of a vehicle seat belt warning circuit and prevents energization of the vehicle starter solenoid. The circuit further includes a good start latch which permits restarting of the vehicle as long as the driver's seat is occupied. The latches are interconnected so that when the

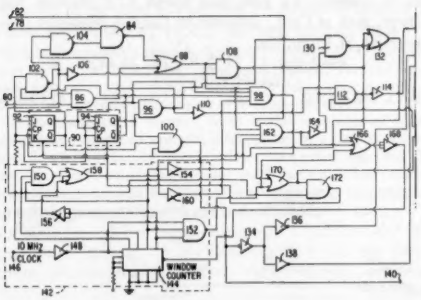


sequence latch is enabled and the good start latch is disabled and once the good start latch is enabled the sequence latch is disabled. Means are provided in each latch circuit to stabilize the latches against voltage transient prevalent in vehicle operation. A seat bounce protection circuit is proposed which prevents momentary deactuation of the seat switch from affecting the state of the latches.

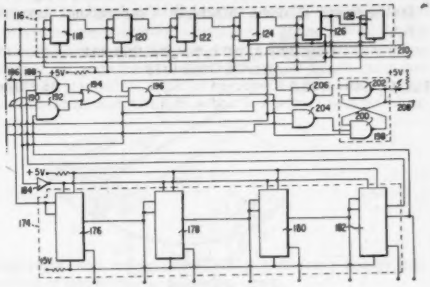
3,836,956
METHOD AND APPARATUS FOR DECODING BIPHASE SIGNALS

Charles Cross, Glenside, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 12, 1972, Ser. No. 314,307
Int. Cl. G08c 25/00; H04b 15/00
U.S. Cl. 340—146.1 AB **12 Claims**



A method and apparatus for decoding biphase signals are disclosed in which each bit of a received biphase signal causes generation of a window in which the next successive bit must fall. By this means the received message is distinguished from noise and timed. The received signal message preferably includes a synchronization code and a double word body formed by a single word which is transmitted twice. The synchronization code is examined for both timing and pattern. The second word is compared bit by bit with the first word to verify the received message and further preclude the possibility of noise being erroneously considered as a message bit. If the two

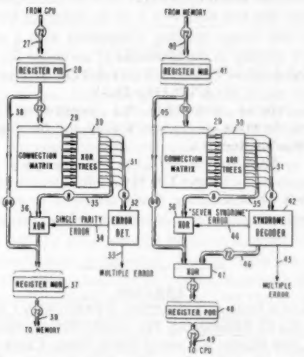


words are not identical this indicates an error and all further action is inhibited.

3,836,957
DATA STORAGE SYSTEM WITH DEFERRED ERROR DETECTION

Keith A. Duke, Wappingers Falls, and Benedicto U. Messina, Pougkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 26, 1973, Ser. No. 373,708
Int. Cl. H04l 1/10; G06f 11/12
U.S. Cl. 340—146.1 AL **7 Claims**

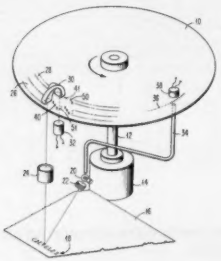


Disclosed is a data transfer mechanism between the data bus of a data processing system and a data store. The data transfer mechanism includes common logic for converting between parity coded data on the data bus and error checking and correcting (ECC) coded data associated with the data store. Parity errors in data for presentation to the data store are detected, and single error correction and double error detection (SEC/DEC) syndrome bits are generated from the original ECC bits when data is to be read from the store and presented to the data bus. Additional circuitry is included to cause a signal indicating a single parity error on the data bus to modify the ECC bits generated for presentation to the data store with the data. On a subsequent read of the data from the data store, the modified ECC bits will produce a set of syndrome bits, specially recognized, to cause the data to be presented to the data bus with the original byte parity error recreated for subsequent detection.

3,836,958
OPTICAL CHARACTER RECOGNITION SCANNING APPARATUS

David Harwood McMurtry, Portola Valley, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 3, 1972, Ser. No. 268,244
Int. Cl. G06k 9/18
U.S. Cl. 340—146.3 F 25 Claims



The recognition of human and machine readable characters of a family of type of which each character comprises one or more constrained segments is enhanced by a single element shutter and light conducting and optical image rotating component in an opto-mechanical subassembly for precisely scanning short straight line segments in seriatim. The movable shutter is arranged with apertures in two parallel tracks moving past the field of scan and preferably the apertures are arranged for scanning a multiple of characters for each full movement of the shutter. The apertures for each character are divided into slits and slots with a slit in one track cooperating by way of the image rotating component with a slot in the other track moving in the direction of an image line segment under consideration. Drum, belt and disk shutters are contemplated, and plural image rotating elements and associated sets of aperture tracks are feasible with optical fiber bundles. A moving mirror illuminating and scanning system is also disclosed. Opto-electronic circuitry produces electric representations in response to the presence and absence of character line segments in the image. The basic opto-electronic circuitry comprises a photosensitive diode arranged to receive light from the scanning field of a document and suitable logical circuitry.

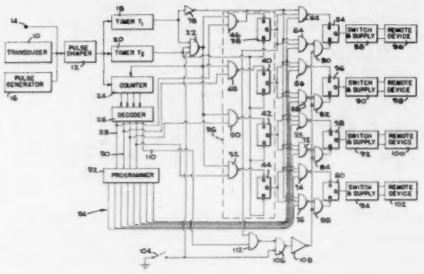
3,836,959
APPARATUS FOR ACTIVATING REMOTELY LOCATED DEVICES IN RESPONSE TO ACOUSTICAL SIGNALS

John Pao, San Mateo; Raymond Wang, Santa Clara; Ben Tsutomu Takashima, San Jose; Chuck Y. Pon, San Francisco, and Thomas T. Kanetake, Mountain View, all of Calif., assignors to Pantex Corporation, San Mateo, Calif.

Filed Feb. 5, 1973, Ser. No. 329,569
Int. Cl. H04q 5/00
U.S. Cl. 340—148 4 Claims

The disclosed embodiment of the present invention is a system which is responsive to the ringing tones of a telephone instrument for controlling the energization of one or more remote devices. The system includes a counter and decoder responsive to the ringing tones to provide a plurality of outputs each representing a particular number of sensed telephone rings. A pair of timers is actuated by the first ringing tone which is received when in their quiescent state; one of which has a shorter timing period than the other. A plurality of latches are each responsive to a respective output of the decoder. At the end of the first of the shorter timing periods, the particular decoder output which is high sets the corresponding latch, thereby storing the information representing the number of telephone ringing tones received during that timing period, which number of rings is controlled by the user at the calling station.

A programmable means, such as a plurality of switches, connects the outputs of the decoder to appropriate enabling gates of a second set of latches. These gates are enabled at the end of the second of the shorter timing periods and have, as a second input, an output of one of the first set of latches, such that one of the second set of latches is either set or reset when the correct number of rings is sensed in the first of the shorter

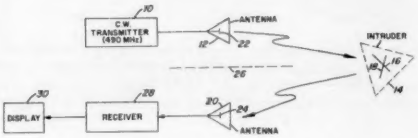


timing periods and the correct number of rings is sensed in the second of the shorter timing periods. Each of the second set of latches controls a switching element to connect supply voltage to the corresponding remote device. Both timers reset the counter at the end of their timing period and the first set of latches is reset at the end of the longer timing period, such that the operation must be completed by the user and the information in the form of telephone ringing tones must be generated at the called station within this longer timing period.

3,836,960
SENSOR SYSTEM

John B. Gehman, La Jolla, and Joseph V. J. Ravenis, San Diego, both of Calif., assignors to General Dynamics Corporation, St. Louis, Mo.

Filed Mar. 12, 1970, Ser. No. 24,442
Int. Cl. G01s 9/02
U.S. Cl. 343—5 PD 22 Claims

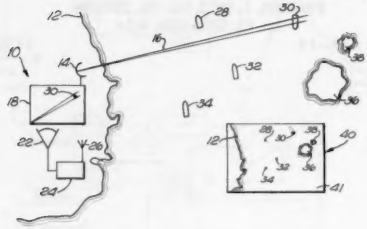


A sensor system suitable for use as an intrusion detector or metal detector is described. The system transmits CW signals in the VHF or UHF frequency bands and receives modulation components of these signals which are being re-radiated from metal to metal bodies that are in contact with each other in or on the object to be detected. When the amplitude of these re-radiated modulation components exceeds a predetermined threshold, the presence of the object is indicated.

3,836,961
NAVIGATION AID

Joseph C. Ennis, Sylmar, Calif., and Ray Winn, Wakefield, Mass., assignors to Development Associates, Goleta, Calif.

Filed Aug. 14, 1972, Ser. No. 280,623
Int. Cl. G01s 9/00
U.S. Cl. 343—6 TV 15 Claims



A navigation aid for use by moving vehicles such as boats and airplanes and which utilizes ground-based radar in conjunction with television, the receiver portion being carried by the vehicle. More specifically, in one form there is disclosed a sector scan radar system which provides a typical plan position indicating (PPI) display which is viewed by a television camera. The PPI display utilizes phosphors of extremely short persistence so that effectively the only targets appearing on the PPI display are those then being illuminated by the radar signal. A television camera (vidicon) generates signals in response to the PPI display which remain on the vidicon photo mosaic until electronically removed. The signals generated by the vidicon are transmitted over a television antenna to vehicles within range of the radar. Each of the vehicles carries its own television receiver responsive to the signals transmitted from the television antenna. In addition thereto, each of the receivers carries a special circuit which receives the radar pulses transmitted from the radar antenna. The envelope representative of the radar signals is generated by a detector means. The thus generated envelope is differentiated thereby to provide a signal responsive to the moment of greatest illumination by the radar antenna which is utilized to contrast the signal then appearing on the television screen. Thus, each vehicle can identify itself independently from all other vehicles within the area of the range of the radar. The television tube carried by the vehicle utilizes long decay time phosphors of the type normally encountered in radar displays.

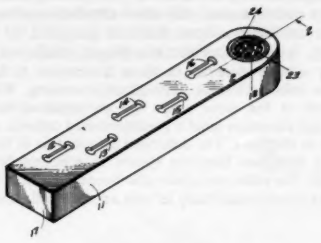
Also disclosed in another form is the provision of radar-generated range and azimuth information to a data processor means which may also receive data from other sources. The data processor converts the radar and other signal information to television-compatible format for subsequent transmission to vehicle-carried receivers as above disclosed.

3,836,962
PASSIVE MICROWAVE RECEIVER-TRANSMITTER

John F. Zaleski, Valhalla, N.Y., assignor to The Singer Company, New York, N.Y.

Filed Aug. 22, 1956, Ser. No. 605,663
Int. Cl. G01s 9/56
U.S. Cl. 343—6.8 R 14 Claims

1. A microwave transducer comprising, a microwave resonant cavity, a randomly embossed thin metallic diaphragm closing one face thereof, a conical metallic post extending from one wall of said cavity towards said diaphragm having a sharp tip in close proximity to but spaced from said

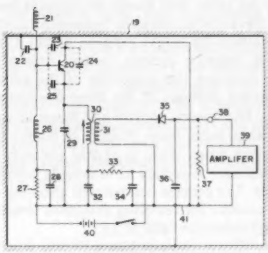


diaphragm, and means for coupling microwave energy into and out of said microwave resonant cavity.

3,836,963
TRANSISTOR OSCILLATOR-DETECTOR FOR PROXIMITY FUZES

Collins Arsem, Bethesda, Md., and Marshall M. Algor, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 28, 1967, Ser. No. 665,197
Int. Cl. F42c 13/04; G01s 9/04
U.S. Cl. 343—7 PF 3 Claims



A transistor oscillator-detector for use as the transmitting oscillator and the detector of a received doppler signal in a radio proximity fuze is described. The oscillator is a transistor oscillator circuit in which the tank coil acts as both the oscillator tank inductance and as the antenna. One end of this inductor is connected both mechanically and electrically while the other end of the coil is mechanically free but electrically connected to the circuit by means of stray capacitances. In one embodiment the doppler signal is detected by a semiconductor diode loosely coupled to the oscillator by means of a grounded inductive loop. In another embodiment detection is accomplished by means of changes in voltages across an emitter resistance and these voltages changes are AC coupled to an output terminal. In the former embodiment the transistor oscillator-detector disclosed employs a PNP transistor and in the latter embodiment the transistor oscillator-detector employs a NPN transistor.

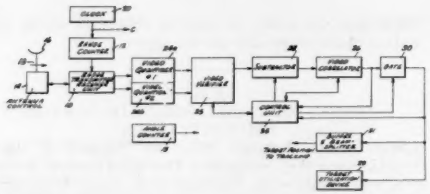
3,836,964
AUTOMATIC DATA PROCESSOR

Norol T. Evans, San Pedro, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 18, 1967, Ser. No. 676,243
Int. Cl. G01s 9/02
U.S. Cl. 343—7 A 9 Claims

An automatic data processor which allows a completely automatic track-while-scan function to be performed with a pen-

cil beam radar. Multi-level detection systems are employed to process quantized and verified signals which have been reduced from an analog signal to digital data words indicative of the weight thereof. The codes in the verifier are compared with other codes so that only predetermined known values shown on one of two input channels are gated for further processing. A video correlator is employed which implements a moving window detector in three dimensions to help organize the information for subsequent processing. When the data words in the same range bin on adjacent beams in azimuth and elevation meet a predetermined criteria, a target detection is declared. The detection information is then sent through a detection blanking system to a beamsplitter and buffer unit. The video correlator also keeps track of how many detections occur sequentially in both azimuth and elevation at the same range bin. If the number of detections exceed a preset value, the clutter reject bit will be set and the beamsplitter will reject this data as clutter. The beamsplitter makes use of the video data words on adjacent beams in both azimuth and elevation to calculate beamsplit coordinates, and thereby determines the target location within a fraction of a beamwidth. A detector criteria control unit performs two functions for reducing the sensitivity of the system in automatically selected portions of the three-dimensional surveillance volume. The criteria control unit maps all target reports and distinguishes them from clutter. It blanks signals to a utilization device when there is clutter present; it may also modify the quantizer to reduce its sensitivity without blanking in certain cells. The criteria control unit also may incorporate a target rate counter for reducing detection sensitivity in sectors with a high detection rate.



3,836,965

METHOD AND APPARATUS FOR THE DETECTION OF A PRESENCE

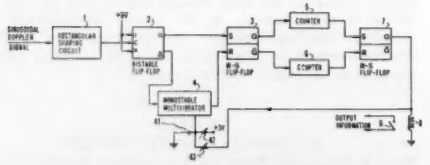
Jean-Claude Preti, Clamart, France, assignor to Societe De Fabrication D'Instruments De Measure (S.F.I.M.), Massy, France

Filed Jan. 31, 1973, Ser. No. 328,288

Claims priority, application France, Sept. 12, 1972, 72.32248

Int. Cl. G01s *9/44*

U.S. Cl. 343—8 **6 Claims**



A vehicle presence detector circuit for the control of coloured light traffic signals in which the output of a Doppler radar system, representing the speed of vehicles, operates a relay when the speed drops below a threshold value and the relay is only reset when the speed signal exceeds a higher threshold value.

3,836,966

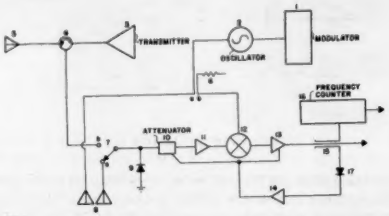
DUAL MODE RADAR SYSTEM

Belmont Frisbee, Jr., Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 5, 1972, Ser. No. 298,096

Int. Cl. G01s *9/04, 9/24*

U.S. Cl. 343—14 **1 Claim**



A dual mode electronic system combining the seeker radar system and the altimeter radar system of a missile. The present invention includes a switch for selecting the operative mode from either of the two modes incorporated (seeker radar system or altimeter radar system). The components of one system which duplicate the components of the other system are eliminated since the duplicated components will be shared.

3,836,967

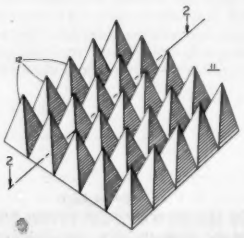
BROADBAND MICROWAVE ENERGY ABSORPTIVE STRUCTURE

Rufus W. Wright, 12 Westmoreland Rd., Alexandria, Va. 22308

Continuation-in-part of Ser. No. 720,512, March 10, 1958, abandoned. This application May 28, 1962, Ser. No. 199,226

Int. Cl. H01g *17/00*

U.S. Cl. 343—18 A **7 Claims**

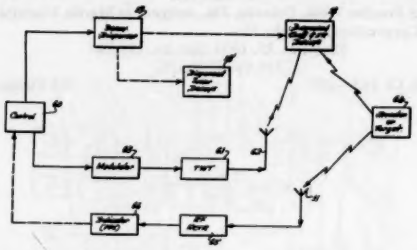


The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

3,836,968
COUNTER MEASURES SYSTEM

George H. Schillreff, Glendora, Calif., assignor to General Dynamics Corporation, Pomona, Calif.

Filed Aug. 12, 1964, Ser. No. 389,525
Int. Cl. H04k 3/00
U.S. Cl. 343—18 E 8 Claims

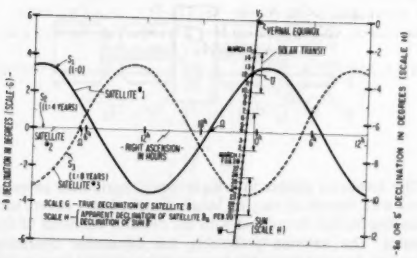


6. A system for providing protective cover for a craft subject to attack comprising: electronic apparatus adapted for receiving signals from a possible attacker, apparatus operatively connected with said electronic apparatus for indicating the position of an attacker, decoy dispensing means, means for controlling said decoy dispensing means, said decoy dispensing means being adapted to launch infrared and microwave-reflecting decoys, and means for intermittently illuminating said microwave reflecting decoys with energy corresponding in frequency and phase with the signals received from an attacker, said illuminating means being operatively connected to said controlling means.

3,836,969
GEO-SYNCHRONOUS SATELLITES IN QUASI-EQUATORIAL ORBITS

Dold Spencer Bond, Princeton, and John Michael Leigh Holman, Cranbury, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 26, 1971, Ser. No. 192,083
Int. Cl. H04b 7/20
U.S. Cl. 343—100 ST 18 Claims

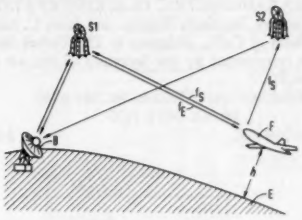


The method of the selection of launch conditions for a satellite at substantially synchronous altitude above the earth in a slightly inclined orbit relative to the equatorial plane of the earth to limit the inclination that may be induced by perturbations for significantly long periods of time without the need of orbit adjusting means (north-south station keeping means) aboard the satellite. One or more such satellites are arranged in a communication system in cooperation with at least one ground station. In a two-satellite system a communication channel is continuously operated between at least one satellite and the ground station notwithstanding solar outages.

3,836,970
ANTENNA ARRAY FOR AIRCRAFT NAVIGATION SYSTEM

Rafael Reitzig, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 19, 1972, Ser. No. 254,893
Claims priority, application Germany, June 8, 1971, 2128524
Int. Cl. H01q 3/26
U.S. Cl. 343—100 ST 11 Claims

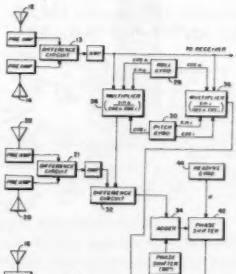


An electronically phased control antenna array having a number of radiators which are to be controlled so as to form two beams respectively pointed toward two separate earth satellites in an aeronautical satellite navigation system and wherein the two antenna arrays are controlled through a Butler matrix comprising a distribution network having phase rotation elements and wherein a plurality of outputs which differ in phase are selectively obtained so as to control the direction of the antenna beam, thus maintaining the antenna arrays respectively pointed at the satellites. The selection of the switching control for the matrices which control the antenna arrays may be accomplished by the use of a computer which has a memory for programming the switching in response to a prior flight path over the same region. Alternatively, the outputs from the antenna arrays and matrix may be sampled and the switches of the matrices controlled so as to obtain the largest signal thus assuring that the arrays are pointing toward the satellites.

3,836,971
AIRCRAFT VLF RECEIVING ANTENNA

John E. Bickel, and Robert J. Gallenberger, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 12, 1973, Ser. No. 331,431
Int. Cl. H04b 7/00
U.S. Cl. 343—100 PE 4 Claims



Apparatus for receiving the horizontal electric field component of incoming VLF signals to improve airborne commu-

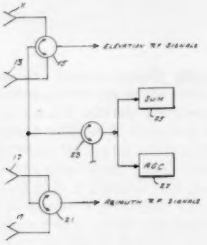
nication systems. Vertical antenna elements and horizontal antenna elements are positioned in space quadrature with respect to each other about the fuselage of an aircraft to receive the vertical component and noise, and the horizontal component, respectively, when the aircraft is flying level. Vertically polarized signal and noise received by the two antennas when the aircraft bank angle and pitch are not zero are subtracted from the output of the horizontal antenna elements.

3,836,972

FOUR-HORN RADIOMETRIC TRACKING RF SYSTEM

William H. Conway, Hacienda Heights, and Jerry C. Aukland, Fullerton, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 16, 1973, Ser. No. 351,670
Int. Cl. G01w *1/00*
U.S. Cl. 343—100 ME **3 Claims**



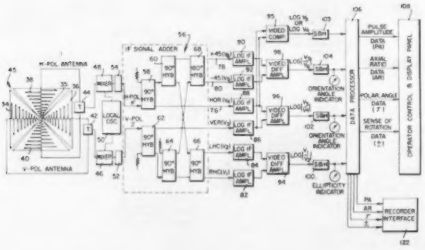
A radiometric system having two pairs of null seeking horns with two positional outputs and an amplitude output for summing and automatic gain control. The positional output in each pair is constantly switched alternately between adjacent horns in each pair. Each of the horns not connected to the positional outputs is fed to a third switch which feeds the sum and the AGC circuits.

3,836,973

POLARIMETER APPARATUS

Harold Shnitkin, Roslyn; Albert Tashjian, Islip, and Edward J. Shubel, Plainview, all of N.Y., assignors to Maxson Electronics Corporation, Great River, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,443
Int. Cl. G01s *5/02*
U.S. Cl. 343—113 R **8 Claims**



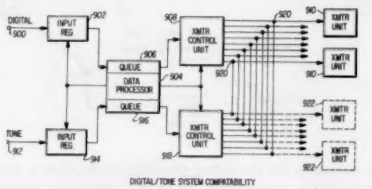
An antenna and receiver system measures the polarization characteristics of an incident radio frequency signal. The system employs a signal processor for generating digital output signals indicating the angular orientation of the electric field vector of the arriving wave for a linearly polarized wave, or the degree of ellipticity and the orientation of the major axis for elliptically polarized incident waves. The signal processing is accomplished by means of a signal adder, six channels of log IF amplification and three video difference amplifiers.

3,836,974

TRANSMITTER SEQUENCING METHOD AND APPARATUS

Joel Douglas Wells, Orlando, Fla., assignor to Martin Marietta Corporation, Orlando, Fla.

Filed Oct. 25, 1971, Ser. No. 191,727
Int. Cl. H04b *1/02*
U.S. Cl. 343—208 **12 Claims**



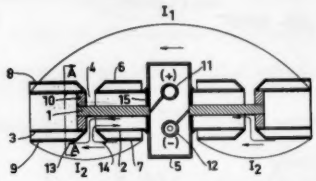
A plural transmitter, digital data transmission and remote control system in the environment of a paging system in which mutual interference by the transmitters is eliminated through the sequencing thereof. Embodiments compatible with existing tone systems are disclosed for both plural system-single area operation and for plural system-plural area operation.

3,836,975

LOGARITHMIC, PERIODICAL ANTENNA ARRAY

Erland Cassel, Djursholm, Sweden, assignor to Allgon Antenn AB, Akersberga, Sweden

Filed Mar. 1, 1973, Ser. No. 337,176
Claims priority, application Sweden, Mar. 9, 1972, 4082/72
Int. Cl. H01q *9/16, 9/28, 11/10*
U.S. Cl. 343—792.5 **7 Claims**



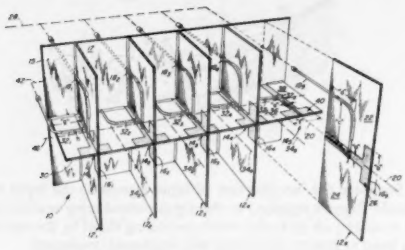
The invention relates to a logarithmic, periodical antenna array with dipoles of varying length attached to a boom, surrounding feeders in contact with the radiator elements of the dipoles. The antenna preferably has adjustable operating direction. In order to enable the use of the antenna for two different frequency ranges, each half-wave dipole has a central portion protruding from the boom and surrounded by two tubular collinear members separated by a gap. The inner member is only secured to the boom, and the outer member only to the end of the arm. Free outside and along it, at least one of the tubular members has a metal member, only attached to the end of the tube at the gap. In the lower frequency range the current distribution half-wave reaches between the outer tubular members in each dipole pair, and in the higher frequency range the outside metal members will give one current distribution half-wave over each radiator element in a dipole pair.

3,836,976

CLOSELY SPACED ORTHOGONAL DIPOLE ARRAY

George J. Monser; George S. Hardie; John R. Ehrhardt, Santa Barbara, and Terry M. Smith, San Francisco, all of Calif., assignors to Raytheon Company, Lexington, Mass.

Filed Apr. 19, 1973, Ser. No. 352,760
Int. Cl. H01q 9/28
U.S. Cl. 343—795 8 Claims



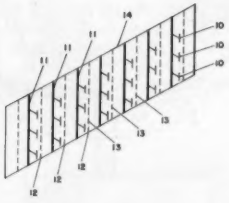
A broadband phased array antenna is shown wherein pairs of mutually orthogonal printed radiating elements, each one of such elements having a flared notch formed therein, are adapted to transmit or receive radio frequency energy having any one of a variety of polarizations.

3,836,977

ANTENNA SYSTEM HAVING A REFLECTOR WITH A SUBSTANTIALLY OPEN CONSTRUCTION

Harold A. Wheeler, Smithtown, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.

Filed June 25, 1973, Ser. No. 373,203
Int. Cl. H01q 21/12
U.S. Cl. 343—815 13 Claims



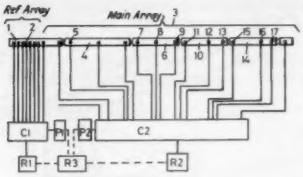
Disclosed is an antenna system having a reflector with an open construction and improved suppression of radiation leakage through the reflector. One embodiment of the invention includes a planar grid of parallel conductive columns having linearly polarized antenna elements mounted on the columns, with the polarization of the elements parallel to the columns. Colinear arrays of tuned reflective elements are interspersed with the columns to cause suppression of radiation leakage through the grid of conductive columns. The planar grid and colinear arrays collectively form a reflector which is open to passage of wind but closed to passage of electromagnetic wave energy.

3,836,978

COMMUTATED ANTENNA ARRAY WITH GRATING LOBE REDUCTION MEANS IN A DOPPLER RADIO NAVIGATION BEACON SYSTEM

Francis Giles Overbury, Cuffley, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 23, 1973, Ser. No. 408,460
Claims priority, application Great Britain, Oct. 31, 1972, 50050/72
Int. Cl. H01q 3/24; G01s 1/44
U.S. Cl. 343—854 6 Claims



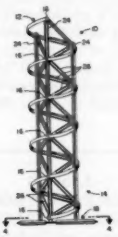
A commutated antenna array for a Doppler type radio navigation beacon system in which there are reference and main arrays. A limited number of additional elements are added to the main array on a semi-random basis and an adjustment in the commutated reference cycle is made in accordance with main array element spacing. Multi-path problems resulting from use of wide antenna spacing in the main array of a commutated reference Doppler Beacon are reduced.

3,836,979

LIGHTWEIGHT DEPLOYABLE HELICAL ANTENNA

Richard M. Kurland, Sherman Oaks, and Gelb N. Fruktow, Los Angeles, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Dec. 14, 1973, Ser. No. 425,022
Int. Cl. H01q 1/36
U.S. Cl. 343—881 9 Claims



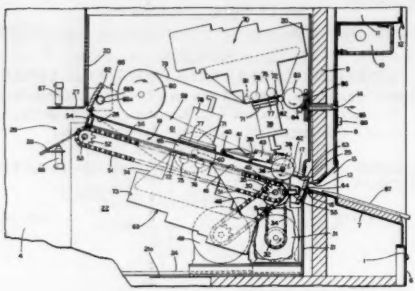
A lightweight deployable helical antenna having a thin, flat electrically conductive radiator strip helically coiled about an axially extensible and contractable supporting structure and pivotally secured at intervals to the structure in a manner such that the antenna is longitudinally contractable to a collapsed configuration and extendible to a deployed configuration. In the preferred embodiment, the antenna supporting structure is a truss frame structure constructed of tubular, resiliently flexible elastic strain energy deployable beams which deform when the frame structure is contracted to store elastic strain energy for extending the antenna to its deployed configuration.

3,836,980

REMOTE DEPOSITORY CONSTRUCTION

Leo J. Grosswiller, Jr., East Canton; Fritz A. Deutsch, Cleveland, and Paul A. Leipelt, Canton, all of Ohio, assignors to Diebold, Incorporated, Canton, Ohio

Filed May 3, 1973, Ser. No. 356,715
Int. Cl. G07g 5/00
U.S. Cl. 346—22 27 Claims



A depository construction for accepting bank deposits at an unattended deposit station unit which may be installed as an individual unit or in conjunction with remote automatic cash dispensing banking equipment. The depository procedure is initiated for automatic operation by pressing a button, use of a key or the insertion of a customer identifying card. A horizontal entry slot is opened to accept a deposit-containing envelope having a predetermined maximum size and maximum thickness when filled. The inserted envelope automatically is power conveyed slightly upward during an operating cycle from the deposit station through the opened entry slot into a security chamber. The entry slot is closed on arrival of the envelope at the security chamber and a receipt number and preferably other selected transaction data is printed on the deposit envelope. At the same time, identical data is printed on a receipt. The deposit envelope then is discharged through an exit opening from the security chamber to a deposit chest. Passage of the envelope to the deposit chest is sensed and then the receipt is delivered to the depositor-customer at the deposit station. A pivoted or rocking control member closes the exit opening when the entry slot is opened, and the exit opening is opened when the entry slot is closed. The entry slot preferably closes after a predetermined time interval if no deposit is made during such time interval. The operation of the various components of the depository mechanism is coordinated to protect the deposit at all times, once operation of the mechanism is initiated and completed by the issuance of a receipt after the deposit envelope has safely reached the deposit chest.

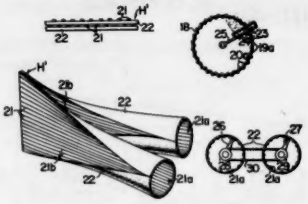
3,836,981

MULTIPLE NEEDLE ELECTRODE DEVICE FOR ELECTROSTATIC RECORDING

Haruo Kusano, Yokohama, and Norisada Takeuchi, Ksaukabe, both of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed May 10, 1972, Ser. No. 251,907
Claims priority, application Japan, May 15, 1971, 46/32584
Int. Cl. G03g 13/00, 15/00
U.S. Cl. 346—74 ES 5 Claims

A multiple needle electrode device comprising at least one signal introducing section including a number of input terminals arranged in a circle, a recording head having a number of electrodes adjacently arranged in two rows with the electrodes of the two rows being disposed in staggered relationship such that the electrodes of one row are disposed adjacent the spaces between the electrodes of the other row, and a number of lead-in conductors connecting the input terminals to the respective electrodes. The electrodes, conductors and terminals may be mounted on one or more insulating base boards whose portions may be twisted into various cylindrical shapes



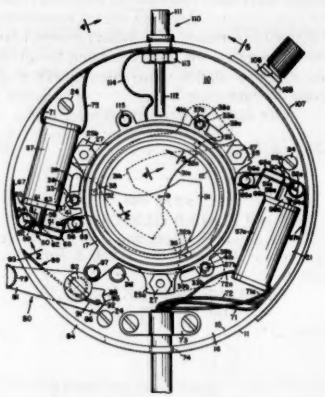
to facilitate the introduction of input signals to the input terminals. Signals supplied to the signal introducing section can be recorded on an electrostatic recording sheet by the recording head at greater speed and with improved resolution.

3,836,982

LOW INERTIA ELECTRONIC CAMERA SHUTTER

Joseph E. Schwartz, Irondequoit, N.Y., assignor to Opto Dynetics Inc., Rochester, N.Y.

Filed July 23, 1973, Ser. No. 381,757
Int. Cl. G03b 9/22
U.S. Cl. 354—234 10 Claims



A low inertial electronic camera shutter is disclosed wherein a ring member coaxially aligned with a bore in a housing pivotally moves a plurality of shutter blades in registry with the bore between open and closed positions for controlling light radiation through the bore. In accordance with the invention, a low inertial means including a longitudinal wire member connected between the ring member and the frame at a pivot point thereon, drives the plurality of shutter blades between the two positions in response to a pulse applied to a solenoid having an armature connected to the wire member at a point thereon to amplify armature movement. The camera shutter includes a flash means including an electrical contact switch actuated by the ring member when the shutter blades are driven into the open position.

3,836,983

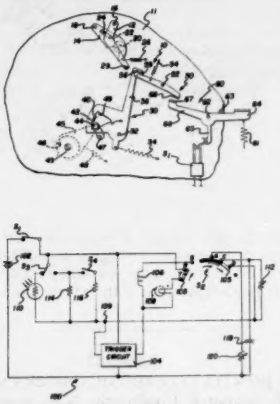
EXPOSURE CONTROL APPARATUS

Lawrence M. Wood, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 278,908, Aug. 9, 1972, abandoned. This application Nov. 29, 1973, Ser. No. 420,184

Int. Cl. G03b 7/08

U.S. Cl. 354—258 2 Claims



Exposure control apparatus for use in photographic equipment for providing an exposure of a light sensitive medium to light. The apparatus includes means defining an exposure aperture through which the light passes to strike the medium, and shutter means movable to define open and closed conditions of the exposure aperture. Impact means are provided for moving the shutter means to define the open and closed conditions, and light responsive, circuit means control the movement of the impact means. The impact means position the shutter means to define the open condition for an interval of time which varies in relation to the intensity of the light. During exposure in light intensity above a preselected intensity level, the circuit means control the impact means for automatically actuating the shutter means to define the open condition for a preselected interval of time.

3,836,984

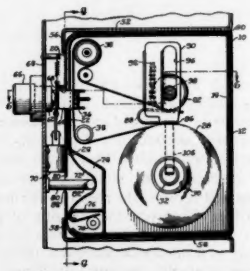
LIGHT SEALED FILM CARTRIDGE

Heinz E. Hertel, Mount Prospect, and George K. Konagamitsu, Chicago, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Apr. 9, 1973, Ser. No. 349,495

Int. Cl. G03b 17/26

U.S. Cl. 354—275 10 Claims



A self-threading, light sealed film cartridge having a curtain device located outside the light sealed portion of the cartridge and adapted to automatically cover and uncover an exposure window in the cartridge. The film end is fixed to the core of a film supply reel, whereby a portion of the film remains adjacent the exposure window after the film in the cartridge has been exposed, enabling removal of the exposed film through the exposure window in the cartridge without destroying the cartridge. A combined film spring compression device, film footage indicator and end-of-reel switch actuator is located in the cartridge, and is formed from a single piece of molded material.

3,836,985

MINIATURE CAMERA WITH FRONT WALL COVER

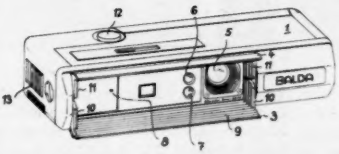
Karl-Heinz Lange, Bunde, Germany, assignor to Balda-Werke Photographische Gerate Und Kunststoff GmbH & Co. KG, Bunde, Germany

Filed May 29, 1973, Ser. No. 364,856

Claims priority, application Germany, June 2, 1972, 2226808

Int. Cl. G03b 11/04, 19/00

U.S. Cl. 354—287 10 Claims



A miniature camera having a generally rectangular front wall provided with elongated top and bottom edges and opposed end edges which are substantially shorter than the top and bottom edges. At least one cover plate is pivotally connected to the housing of the camera for swinging movement about an axis parallel to the top and bottom edges of the front wall between a closed position covering at least part of the front wall and an open position uncovering the latter part of the front wall. This part of the front wall is provided with openings through which light can reach an objective and a viewfinder, so that when the cover plate is in its closed position these openings are covered to protect the objective and viewfinder against dust, foreign matter, and the like.

3,836,986

TRIPOD FOR CAMERA

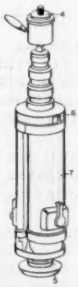
Michio Kawazoe, 799-17, Higashi-Oizumi, Nerima-ku, Tokyo, Japan

Filed Feb. 9, 1973, Ser. No. 331,255

Claims priority, application Japan, Feb. 10, 1972, 47-16989

Int. Cl. G03b 17/56

U.S. Cl. 354—293 1 Claim



A camera support comprises a spindle within which are telescopically fitted sleeves which can be extended so that the

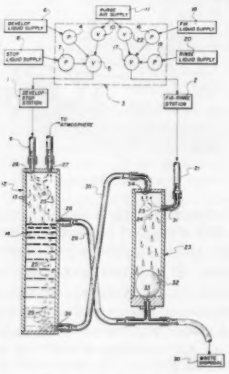
spindle can be extended vertically from a relatively small length to a larger length at the top of which a camera can be attached. The spindle is provided with three pivoting legs each having telescoping sections so that the legs can be extended. The legs can be pivoted from the spindle outwardly toward the bottom to form a tripod. The legs are in the shape of partial sectors of a circle so that when the legs with their telescoped sections retracted, are pivoted inward to the spindle they form a cylindrical surface around the spindle, in which form the camera support is a unipod.

3,836,987

PHOTOGRAPHIC CHEMICAL WASTE HANDLING APPARATUS AND METHOD

Burton C. Gibbons, Henrietta, and Harry L. Westacott, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 4, 1973, Ser. No. 366,819
Int. Cl. G03d 7/00
U.S. Cl. 354—300 **8 Claims**



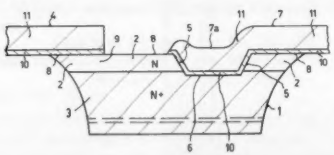
A waste gas and a waste liquid, containing chemicals which have been used in the processing of film, are brought into contact with each other in a waste holding chamber. During such contact, the waste liquid serves to substantially completely remove a noxious substance from the waste gas. Thereafter, the waste gas is vented from the chamber into the atmosphere without the polluting affect that the noxious substance might otherwise produce.

3,836,988

SEMICONDUCTOR DEVICES

Kenneth Board, Salfords, near Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 19, 1973, Ser. No. 416,992
Claims priority, application Great Britain, Nov. 24, 1973, 54388/73
Int. Cl. H03b 7/00
U.S. Cl. 357—3 **9 Claims**



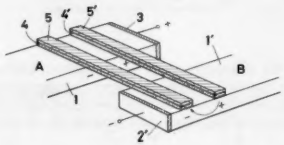
A beam lead contact arrangement for a Gunn diode, having a lightly doped active layer on a heavily doped substrate. One contact connects to the top surface of the active layer, while the other contact is connected to the heavily doped substrate through a hole in the active layer. The second contact also makes contact to the active layer, but current flow is vertical through the layer due to spreading resistance.

3,836,989

BULK SEMICONDUCTOR DEVICE

Shoei Kataoka; Nobuo Hashizume, both of Tokyo; Kazutaka Tomizawa, Kamagaya; Mititada Morisue, Urawa, and Yasuo Komamiya, Yokohama, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Feb. 15, 1973, Ser. No. 332,730
Int. Cl. H03k 17/72
U.S. Cl. 357—3 **28 Claims**



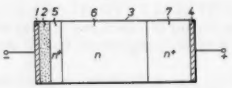
Disclosed is a semiconductor device comprising at least two semiconductor elements integrally connected by an insulator, each semiconductor showing negative differential conductivity under the influence of a high electric field. A high electric field domain or space charges which are generated in one of the semiconductor elements can be transferred to the other element by directly affecting the other element via an insulator.

3,836,990

ELECTRICAL COMPONENT

Wolfgang Harth, Braunschweig, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt/Main, Germany

Filed Feb. 16, 1973, Ser. No. 332,814
Claims priority, application Germany, Mar. 2, 1972, 2209979
Int. Cl. H01l 3/00
U.S. Cl. 317—234 **9 Claims**



An electrical component comprises a multilayer body having a layer sequence metal, insulator, semiconductor, metal.

3,836,991

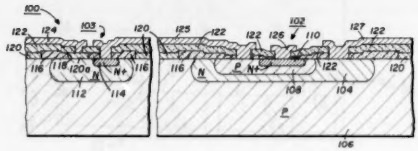
SEMICONDUCTOR DEVICE HAVING EPITAXIAL REGION OF PREDETERMINED THICKNESS

William M. Portnoy, Richardson; Warren P. Waters, Dallas, and Emery C. Wisman, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 88,139, Nov. 9, 1970, abandoned, which is a division of Ser. No. 470,456, July 8, 1965, Pat. No. 3,615,929. This application Feb. 23, 1973, Ser. No. 335,270
Int. Cl. H01l 19/00
U.S. Cl. 357—15 **8 Claims**

This disclosure concerns a semiconductor device including a semiconductor substrate, an oxide layer of preselected thickness disposed on a surface of the substrate, and a

semiconductor epitaxial plug located within an opening provided in the oxide layer so as to be disposed on the surface of the substrate. The thickness of the epitaxial plug is predetermined and controlled by the thickness of the oxide layer which is arranged in confining relationship therewith. In one specific application, the device may take the form of a metal-semiconductor diode construction where the epitaxial plug is of high resistivity and overlies a portion of a diffused region of lower



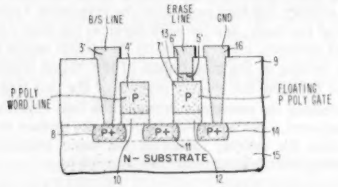
resistivity formed in the surface of the substrate. The oxide layer in which the epitaxial plug is confined has a second opening extending through the thickness thereof in registration with the diffused region of lower resistivity in the substrate, with a first conductor strip extending through the second opening in the oxide layer into ohmic contact with the diffused region and a second conductor strip being disposed in rectifying contact with the epitaxial plug.

3,836,992

ELECTRICALLY ERASABLE FLOATING GATE FET MEMORY CELL

Shakir A. Abbas; Conrad A. Barile; Ralph D. Lane, all of Wappingers Falls, and Peter T. Liu, Beacon, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 16, 1973, Ser. No. 341,814
Int. Cl. H011 11/14
U.S. Cl. 357—23 **6 Claims**



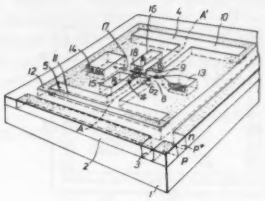
A read-mostly memory cell is disclosed comprising a floating gate avalanche injection field effect transistor storage device equipped with an erasing electrode. The memory portion of the erasable storage devices comprises a P channel FET having a floating polycrystalline silicon gate separated from an N-doped substrate by a layer of silicon dioxide. The erasing portion of the device comprises an erasing electrode separated from the polycrystalline silicon floating gate by a thermally grown layer of silicon dioxide having a leakage characteristic which is low in the presence of low electrical fields and high in the presence of high electrical fields. The floating gate is heavily doped with boron which also partially dopes the thermally grown silicon dioxide layer. The floating gate is charged negatively by avalanche breakdown of the FET drain while the erase gate is grounded to the substrate. The floating gate is discharged (erased) upon the application of a positive pulse to the erase electrode with respect to the semiconductor substrate causing electrodes on the charged floating gate to leak through the thermal oxide to the erasing electrode.

3,836,993

MAGNETIC FIELD DEPENDENT FIELD EFFECT TRANSISTOR

Vishnuprakash Joshi, Bangalore, India, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Continuation of Ser. No. 212,510, Dec. 27, 1971, abandoned. This application Oct. 18, 1973, Ser. No. 407,669
Int. Cl. H011 11/14
U.S. Cl. 357—27 **15 Claims**



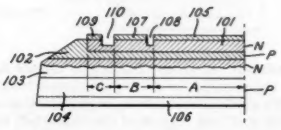
A magnetic field effect transistor comprises a semiconductor body with a region of a specific type of conductivity, a source and a drain electrode between which is provided a channel region formed by a narrowed part of the region of the specific type of conductivity at least one barrier layer defining the channel region and controlling the channel region through the space charge region issuing from the barrier layer, and at least one additional electrode positioned laterally of the direct charge carrier path between the source and drain electrodes and to which at least part of the charge carrier can be deflected in the presence of a suitable magnetic field.

3,836,994

THYRISTOR OVERVOLTAGE PROTECTIVE ELEMENT

Dante E. Piccone, Philadelphia; Istvan Somos, and James E. McIntyre, both of Lansdowne, all of Pa., assignors to General Electric Company, Philadelphia, Pa.

Continuation of Ser. No. 198,798, Nov. 15, 1971, abandoned, which is a division of Ser. No. 88,853, Nov. 12, 1970, , which is a continuation-in-part of Ser. No. 820,959, May 1, 1969, Pat. No. 3,662,845. This application July 5, 1973, Ser. No. 376,766. The portion of the term of this patent subsequent to Nov. 23, 1988, has been disclaimed.
Int. Cl. H011 9/12
U.S. Cl. 357—38 **7 Claims**



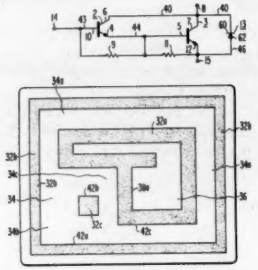
A PNPN semiconductor element comprises an improved double-triggering device wherein two concentric electrodeless auxiliary regions are provided in one end layer, the two regions being so constructed and arranged that the outboard one has an underpass effect and the other one does not.

3,836,995

SEMICONDUCTOR DARLINGTON CIRCUIT

Carl Franklin Wheatley, Jr., Somerset, and Willem Gerard Einthoven, Belle Mead, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 25, 1973, Ser. No. 363,881
Int. Cl. H01l 12/00
U.S. Cl. 357—46 4 Claims



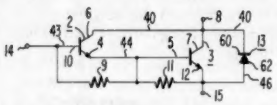
A semiconductor integrated Darlington circuit is provided comprising two transistors, two resistors, and a diode within a body of semiconductor material. The emitter region of one of the transistors completely encircles the emitter region of the other transistor at a surface of the body, whereby certain paths for current from the base contact of the one transistor beneath and around the emitter region thereof are significantly longer than those present in prior art devices, thus contributing to a higher value of one of the device resistors.

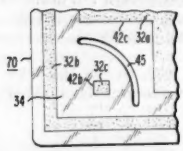
3,836,996

SEMICONDUCTOR DARLINGTON CIRCUIT

William Henry Schilp, Flemington, and Albert Alexander Todd, Piscataway, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sept. 26, 1973, Ser. No. 400,974
Int. Cl. H01l 12/00
U.S. Cl. 357—46 3 Claims





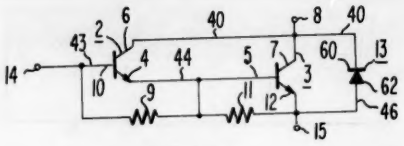
A semiconductor integrated Darlington circuit is provided including an input transistor driving an output transistor, two resistors, and a diode within a body of semiconductor material. The emitter and base regions of the transistors extend to a surface of the body, and, at such surface, the base region of the input transistor is surrounded by the emitter region thereof while a portion of the base region of the output transistor is disposed between the emitter regions of the two transistors. For increasing the resistance between the base regions of the two transistors, a slot is provided through the surface at a position within the emitter region of the input transistor and between the base regions of the two transistors.

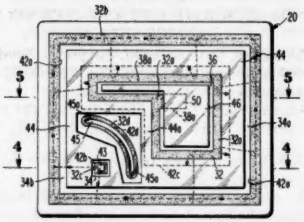
3,836,997

SEMICONDUCTOR DARLINGTON CIRCUIT

Willem Gerard Einthoven, Belle Mead; William Henry Schilp, Flemington, and Albert Alexander Todd, Piscataway, all of N.J., assignors to RCA Corporation

Filed Sept. 26, 1973, Ser. No. 400,975
Int. Cl. H01l 12/00
U.S. Cl. 357—46 4 Claims





A semiconductor integrated Darlington circuit is provided including an input transistor driving an output transistor, two resistors, and a diode within a body of semiconductor material. The emitter and base regions of the transistors extend to a surface of the body, and, at such surface, the base region of the input transistor is surrounded by the emitter region thereof while a portion of the base region of the output transistor is disposed between the emitter regions of the two transistors. For increasing the resistance between the base regions of the two transistors, a slot is provided through the surface at a position within the emitter region of the input transistor and between the base regions of the two transistors.

3,836,998

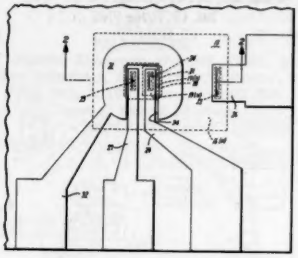
HIGH VOLTAGE BIPOLAR SEMICONDUCTOR DEVICE AND INTEGRATED CIRCUIT USING THE SAME AND METHOD

Joseph Kocsis, Mountain View, and Bohumil Polata, Los Altos, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 111,704, Feb. 1, 1971, abandoned, which is a continuation of Ser. No. 791,665, Jan. 16, 1969, abandoned. This application June 21, 1973, Ser. No. 372,427
Int. Cl. H01l 19/00
U.S. Cl. 357—53 16 Claims

Planar bipolar semiconductor device in which a substantial portion of the collector base junction is covered by an insulating layer and has a layer of metallization overlying a substantial portion of the collector region to cause the depletion layer to be moved into the bulk of the semiconductor body and to be spread over a large area whereby the electric field is greatly

reduced to cause breakdown to take place within the semiconductor body rather than at the surface. In an integrated circuit, the bipolar device is isolated by the use of dielectric isolation.



3,836,999

SEMICONDUCTOR WITH GROWN LAYER RELIEVED IN LATTICE STRAIN

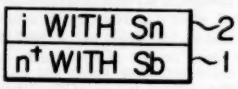
Jun-Ichi Nishizawa, Sendai, Japan, assignor to Semiconductor Research Foundation, Kawauchi, City of Sendai, Japan

Continuation of Ser. No. 181,321, Sept. 17, 1971, abandoned. This application Dec. 5, 1973, Ser. No. 421,858

Claims priority, application Japan, Sept. 21, 1970, 45-83257

Int. Cl. H011 9/10

U.S. Cl. 357—63 **6 Claims**



A substrate of silicon intrinsic or highly doped with an impurity such as antimony has epitaxially grown on it a layer of silicon either highly doped with an impurity, for example, phosphorous or nearly intrinsic and doped with a neutral impurity such as tin to render the substrate equal to the grown layer in the lattice constant.

3,837,000

SEMICONDUCTOR DEVICEHAVING A SILVER LAYER IN PRESSURE CONTACT WITH THE DEVICE SURFACE

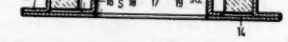
Karl Platzoeder; Heinz Martin, and Reimer Emeis, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 7, 1973, Ser. No. 413,650

Claims priority, application Germany, Nov. 21, 1972, 2257078

Int. Cl. H011 3/00, 5/00

U.S. Cl. 357—65 **11 Claims**



A semiconductor component having at least an outer diffusion doped zone and including a silver-plated aluminum electrode thereon and a supply electrode in pressure contact with said silver-plated aluminum electrode. The supply electrode is composed of a metal, such as aluminum or copper, which has a coefficent of thermal expansion different from that of the semiconductor body and has a contacting surface defined by a layer composed of a silver material, which layer is characterized by a thickness of at least 50μ and a surface roughness ranging between 2 to 10μ.

3,837,001

SPRING CONTACT FOR SEMI-CONDUCTOR DEVICES

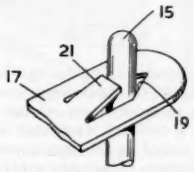
Thomas L. Hughes, and Peter Graham Massey, both of Solihull, England, assignors to Joseph Lucas (Electrical) Limited, Birmingham, England

Continuation of Ser. No. 310,995, Nov. 30, 1972, abandoned. This application Mar. 7, 1974, Ser. No. 448,879

Claims priority, application Great Britain, Dec. 9, 1971, 57143/71

Int. Cl. H011 3/00, 5/00

U.S. Cl. 356—65 **2 Claims**



A semi-conductor device includes a conductive header and a semi-conductor chip secured to the header so that a contact area of the chip is electrically and/or thermally connected to the header. A terminal pin is carried by the header and is insulated therefrom and a metal bridging member extends between the terminal pin and the chip with an end portion of the bridging member engaging a further contact area of the chip to electrically connect the further contact area to the terminal pin. The bridging member is formed remote from the end portion with a slot shaped to define an integral resilient tongue. The terminal pin is received between the free end of the tongue and the wall of the slot adjacent the free end of the tongue and is resiliently urged into engagement with the free end of the tongue and the adjacent wall of the slot at three separate positions angularly spaced around the longitudinal axis of the pin.

3,837,002

GLASS MOLD SEMICONDUCTOR DEVICE

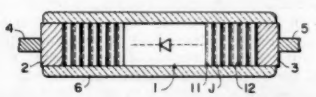
Hisashi Sakamoto; Takeshi Sasaki; Satoshi Mikami, and Yoichi Nakashima, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 2, 1973, Ser. No. 356,441

Claims priority, application Japan, May 12, 1972, 47-46337

Int. Cl. H011 3/00, 5/00

U.S. Cl. 357—72 **26 Claims**

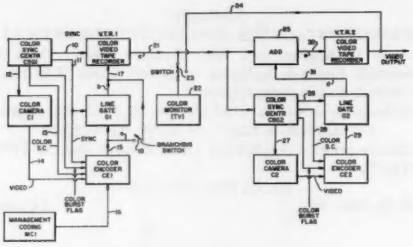


A glass mold semiconductor device comprising a semiconductor pellet, a couple of electrodes disposed on both sides of the semiconductor pellet and a glass layer for covering the semiconductor pellet and at least part of the two of electrodes.

3,837,003
VIDEO TAPE RECORDING OF LINE-SHARED TV SIGNALS

James W. H. Justice, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 25, 1973, Ser. No. 364,159
Int. Cl. H04n 5/78, 7/08
U.S. Cl. 358—4 10 Claims

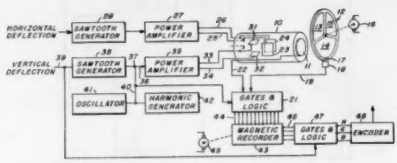


A method and apparatus for producing a tape recording of line-shared video signals corresponding to *n*-separate pictures is accomplished by recording every *n*th line of each picture commencing from a different preselected line. A first tape recorder is used to record a video signal corresponding to one of the *n*-separate pictures by selecting every *n*th line thereof commencing with a preselected line. This recorded video signal includes a recording of horizontal sync pulses and vertical sync pulses. A replayed signal of this recorded video signal is combined by an add circuit with a video signal of another of the *n*-separate pictures consisting of every *n*th line thereof commencing with a preselected line. The second video signal is produced without sync pulses such that one line thereof is followed by a replayed line of recorded video signal. The combined video signals from the add circuit are in the form of line-shared signals which are then recorded onto a single piece of tape.

3,837,004
SCAN CONVERSION WITH MAGNETIC DRUM OR DISC

Paul G. Kennedy, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 21, 1972, Ser. No. 317,332
Int. Cl. H04r 9/42
U.S. Cl. 358—11 18 Claims

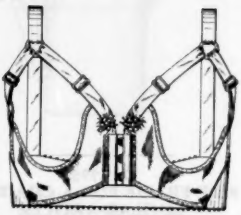


A scan conversion system for a sequential type color T.V. camera is employed to convert the sequential produced color video signals into simultaneous color video signals for use by an encoder at a desired rate. The vertical scan deflection control for the camera is added with a harmonically oscillated signal whereby the scanning of the picture field occurs in a direction perpendicular to the desired scan direction. The resulting waveform is sampled as many times per scan line as the ratio of the scan field rate in the camera to the display field rate for use by an encoder. The sampled waveforms are distributed to magnetic recording heads uniformly positioned around the periphery of spaced recording tracks of a magnetic recording means. One magnetic head from each track is used to read out the composite waveform at the standard rate of 60 fields per second, while the video signals actually occur at a rate of, for example, 180 fields per second. The recording means, in one form, consist of four tracks on a magnetic recorder with three recording heads per track. In another form, the recording means consist of three tracks on a magnetic recorder with two recording heads per track.

DESIGNS

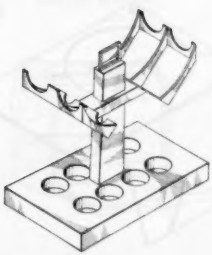
SEPTEMBER 17, 1974

232,785
BRASSIERE
Mulford J. Nobbs, Hacienda Heights, Calif., assignor to Con-Stan Industries, Inc., City of Industry, Calif.
Filed Oct. 3, 1973, Ser. No. 402,895
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24

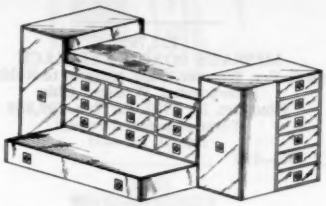


232,786
BUTTON TOPPER OR SIMILAR ARTICLE
Clarence D. Marer, Johnston, R.I., assignor to Swank, Inc., Attleboro, Mass.
Filed May 22, 1972, Ser. No. 255,952
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—451

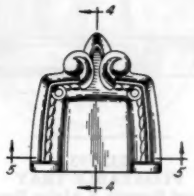
232,787
KETCHUP TRANSFER RACK
Marvin White, 15520 Tustin Village Way, Apt. 53, Tustin, Calif. 92680
Filed Nov. 13, 1972, Ser. No. 306,149
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—20



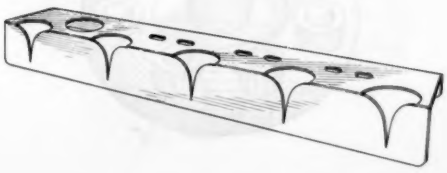
232,788
COMBINED BED AND STORAGE UNIT
Michael A. Mendlin, Springfield, N.J., assignor to Bunk Trunk Distributors, Paramus, N.J.
Original design application July 6, 1971, Ser. No. 160,237, now Patent No. 227,724. Divided and this application Apr. 16, 1973, Ser. No. 351,247
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—80



232,789
SUPPORTING BRACKET
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Original design application Nov. 10, 1972, Ser. No. 305,567. Divided and this application Oct. 24, 1973, Ser. No. 409,247
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—86

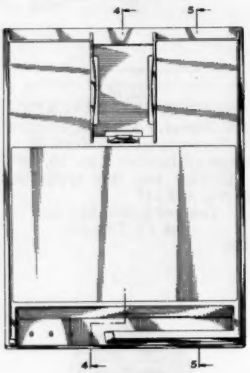


232,790
TOWEL AND TOOTHBRUSH RACK
Ziedonis Kalnins, 1719 Coram Crescent, Mississauga, Ontario, Canada
Filed May 7, 1973, Ser. No. 357,949
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—91

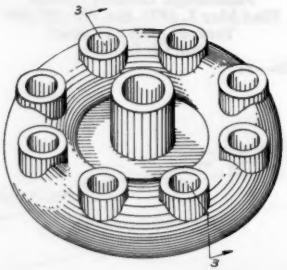


232,791
CHRISTMAS TREE STAND
Donald A. Schulz, Wauwatosa, Wis., assignor to S-B Manufacturing Co., Ltd., Milwaukee, Wis.
Filed Jan. 29, 1973, Ser. No. 327,253
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—105

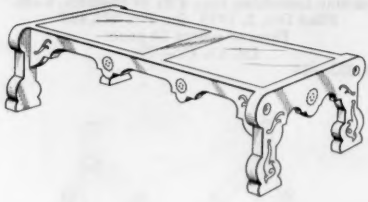
232,792
MESSAGE BOARD AND RACK
James C. Fry, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Oct. 24, 1972, Ser. No. 299,889
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130



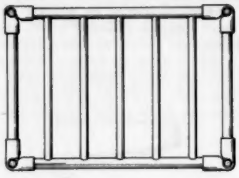
232,793
FLOATABLE TRAY
Leonard Marwood Bennett, 5 Alpine Road, Kalamunda, West Australia, Australia
Filed June 11, 1971, Ser. No. 152,476
Claims priority, application Australia May 12, 1971
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—146



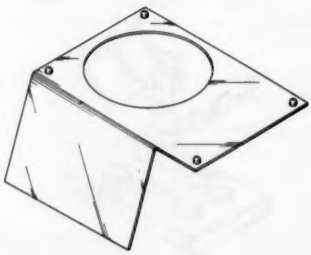
232,794
TABLE
Evalin S. Gilbert, 2121 North Bay Shore Drive, Miami, Fla. 33137
Filed Nov. 20, 1972, Ser. No. 308,041
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



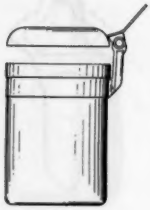
232,795
SIDE FRAME FOR A CHAIR OR SIMILAR ARTICLE
John W. Caldwell, 1829 Warwick Road, San Marino, Calif. 91108
Continuation-in-part of abandoned design applications Ser. No. 133,470 and Ser. No. 133,471, both Apr. 12, 1971. This application Aug. 22, 1973, Ser. No. 390,413
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192



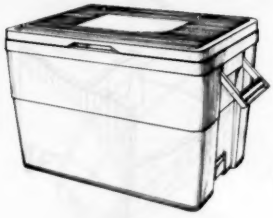
232,796
PLATE TRAY
Clement J. Smith, 1512 Tralle St., Houston, Tex. 77020
Filed Apr. 19, 1973, Ser. No. 352,526
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—37



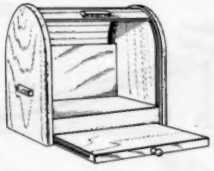
232,797
COMBINED BEVERAGE CAN HOLDER AND LID
John J. Doolittle, 411 59th Ave Terrace W., Bradenton, Fla. 33507
Filed Oct. 16, 1972, Ser. No. 297,815
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—70



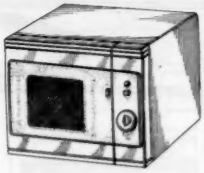
232,798
INSULATED CHEST
David Edward Roche, Nashua, N.H., assignor to Family Products, Inc., Tyngsboro, Mass.
Filed Dec. 14, 1972, Ser. No. 315,209
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—77



232,799
BREADBOX WITH BREADBOARD
Paul Knudson, Box 37, Occidental, Calif. 95465
Filed Dec. 7, 1972, Ser. No. 313,111
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—82

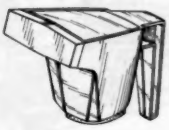


232,800
ELECTRONIC COOKING RANGE
Yoshio Suganoya and Kenji Imano, Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jan. 8, 1973, Ser. No. 322,079
Claims priority, application Japan July 28, 1972
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128

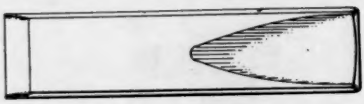


232,801
BROILER SHEET
Jeffrey M. Koblick, 1291 10th St., New Brighton, Minn. 55112
Filed Sept. 25, 1972, Ser. No. 291,893
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—129

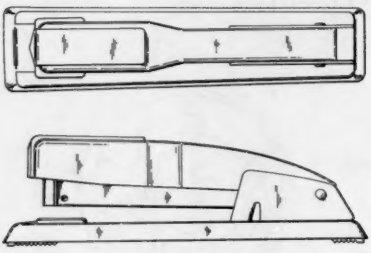
232,802
HOUSING FOR A STEAM GENERATING APPLIANCE
Norman A. Steinkamp, Chicago Heights, and Bernard B. Bluestein, Des Plaines, Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed Mar. 19, 1973, Ser. No. 342,817
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—164



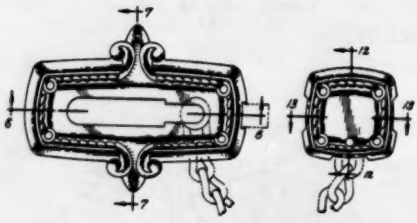
232,803
SPATULA FOR FILL-IN COMPOSITIONS
Charles Kleiman, Highland Park, Ill., assignor to Lake Chemical Co., Chicago, Ill.
Filed Jan. 22, 1973, Ser. No. 325,382
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—45



232,804
STAPLING MACHINE
John J. Power, Westbury, N.Y., assignor to Swingline Inc., Long Island City, N.Y.
Filed Nov. 9, 1972, Ser. No. 304,989
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D8—50

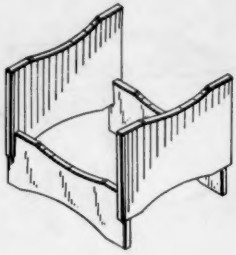


232,805
CHAIN GUARD
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Original design application Nov. 10, 1972, Ser. No. 305,567. Divided and this application Oct. 24, 1973, Ser. No. 409,240
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—131



232,806
KEY BLANK
Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company
Filed Oct. 24, 1973, Ser. No. 409,137
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—136

232,807
SPACER FOR CONCRETE REINFORCING RODS
Joseph Patrick Toner, 117 Rathmore Drive, Rathcoole, Newtownabbey, County Antrim, Northern Ireland
Filed Mar. 23, 1973, Ser. No. 344,109
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—228

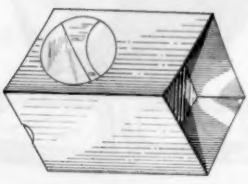


232,808
DOCK SUPPORTING BRACKET
Thomas C. Rockvam, Rte. 2, Box 755, Mound, Minn. 55364
Filed Mar. 23, 1973, Ser. No. 344,762
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—233

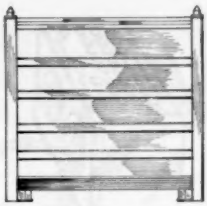
232,809
BOTTLE
John Pardo, Yonkers, N.Y., assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Oct. 11, 1972, Ser. No. 296,658
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—45

232,810
DISPENSING CONTAINER FOR LIQUIDS
Harry M. O'Hare, Anaheim, Calif., assignor to Federal Investment Corporation
Filed June 1, 1972, Ser. No. 258,914
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—71

232,811
CARTON
James N. Edgeington, Richard G. Odell, and Edgar G. Lowrance II, Albuquerque, N. Mex., assignors to IMS Corporation, Albuquerque, N. Mex.
Filed Nov. 29, 1971, Ser. No. 203,122
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224

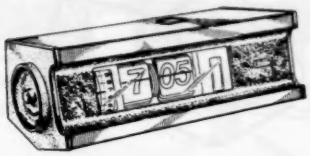


232,812
SHIPPING CONTAINER
Paul E. Ogle, Elmwood Park, and Kenneth L. Coleman, Chicago, Ill., assignors to O-T-D Corporation, Itasca, Ill.
Filed Sept. 22, 1972, Ser. No. 291,308
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—246



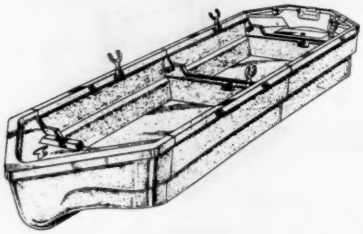
232,813
WIRE BASKET
James E. Myers, Niles, Mich., assignor to Clark Equipment Company
Filed Mar. 21, 1972, Ser. No. 236,799
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D9—247

232,814
DIGITAL ALARM CLOCK
Riki Watanabe, Tokyo, Japan, assignor to Kabushiki Kaisha Koparu, Itabashi-ku, Tokyo-to, Japan
Filed Oct. 30, 1972, Ser. No. 301,767
Claims priority, application Japan Apr. 28, 1972
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15

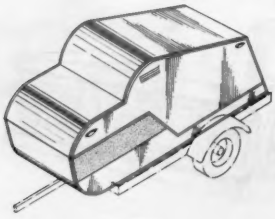


232,815
COMBINED CHESS GAME PLAY TIMER AND SCORER
Arnold W. Niwell, 11015 Kittridge St. 119, North Hollywood, Calif. 91606
Filed Feb. 7, 1973, Ser. No. 330,362
Term of patent 14 years
Int. Cl. D10—*03*
U.S. Cl. D10—40

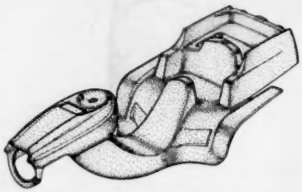
232,816
BOAT
Masami Miya and Masakazu Kitamori, Tokyo, Japan, assignors to Nepon Kabushiki Kaisha (Nepon Company Ltd.), Tokyo, Japan
Filed Nov. 22, 1972, Ser. No. 308,900
Claims priority, application Japan June 2, 1972
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—62



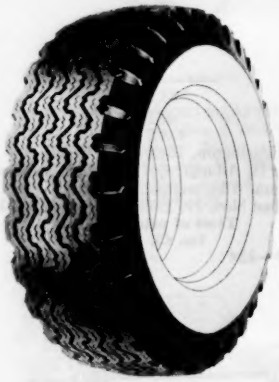
232,817
SNOWMOBILE PROTECTIVE COVER
Samuel V. Watson, Luzerne, Mich., assignor to The S. V. Watson Co., Luzerne, Mich.
Filed July 24, 1972, Ser. No. 274,290
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—7



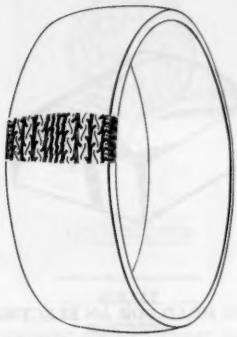
232,818
THREE WHEELED VEHICLE BODY
Edward Roth, 14245 San Feliciano, La Mirada, Calif. 90638
Filed May 10, 1973, Ser. No. 359,111
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—85



232,819
TIRE
Walter W. Hinkel, Massillon, and Philip S. Hammond, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed June 25, 1973, Ser. No. 373,236
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—142

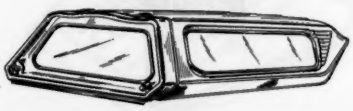


232,820
PNEUMATIC TIRE TREAD AND BUTTRESS
Arthur C. Blankenship, Detroit, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Aug. 2, 1973, Ser. No. 385,132
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—149

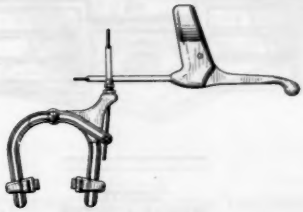


232,821
CAR WASTEBASKET SUPPORT STRAP
James C. Fry, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Nov. 13, 1972, Ser. No. 306,060
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D12—155

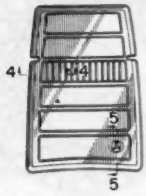
232,822
TOP FOR PICKUP TRUCK
Robert A. Knoss, Hopkins, and Alan B. Eke, Fridley, Minn., assignors to Glasstite, Inc., Dunnell, Minn.
Filed Apr. 6, 1973, Ser. No. 348,511
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—156



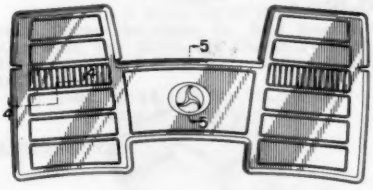
232,823
CALIPER BRAKE ASSEMBLY
John A. Carlson and Theodore M. Tigard, Wichita, Kans., assignors to Conchemco, Incorporated, Lenexa, Kans.
Filed Oct. 26, 1972, Ser. No. 301,147
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—179



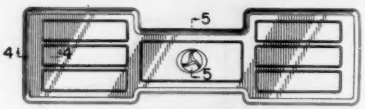
232,824
FRONT CAR MAT
William C. Gerber, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Nov. 13, 1972, Ser. No. 306,057
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D12—203



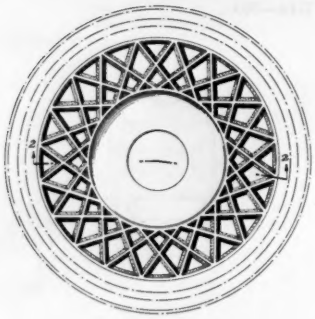
232,825
TWIN FRONT CAR MAT
William C. Gerber, Wooster, Ohio, assignor to Rubbbermaid Incorporated, Wooster, Ohio
Filed Nov. 13, 1972, Ser. No. 306,374
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D12—203



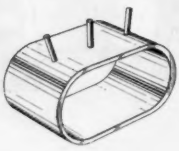
232,826
TWIN REAR CAR MAT
William C. Gerber, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Nov. 13, 1972, Ser. No. 306,375
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D12—203



232,827
WHEEL CENTER
John Siroonian, 2640 W. Bullard St., Fresno, Calif. 93704, and Delmar D. Scott, 5020 Gloria Ave., Los Angeles, Calif. 91406
Filed May 7, 1973, Ser. No. 357,540
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—205

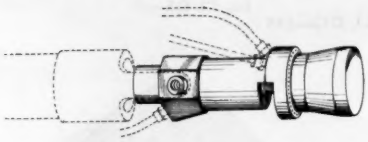


232,828
GUN SIGHT
Stanley J. Kwako, 1001 Hannifin St., Bismark, N. Dak. 58501
Filed Sept. 28, 1972, Ser. No. 294,928
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—8



232,829
INSECT TRAP
J. Patrick Boyd, Carrollton, Tex., assignor to Thuron Industries, Inc., Dallas, Tex.
Filed June 29, 1973, Ser. No. 375,121
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—19

232,830
ATOMIZING HEAD FOR AN ELECTROSTATIC SPRAYER
Albert H. Moos and Norman S. Curtis, Indianapolis, Ind., assignors to Ransburg Corporation, Indianapolis, Ind.
Filed Aug. 30, 1972, Ser. No. 284,992
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34

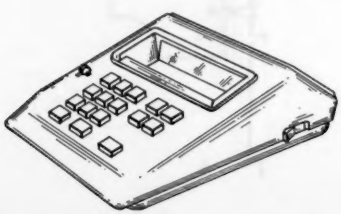


232,831
CATALYTIC HEATER HEAD ATTACHMENT
George G. Vidmar, Jr., Independence, Kans., assignor to Bruest Industries, Inc., Independence, Kans.
Filed May 21, 1973, Ser. No. 361,983
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—137

232,832
HUMIDITY CONTROLLER FOR TERRARIUMS
Louis J. Christen, Jr., St. Louis, Mo., assignor to Christen Incorporated, St. Louis, Mo.
Filed May 29, 1973, Ser. No. 364,554
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—146

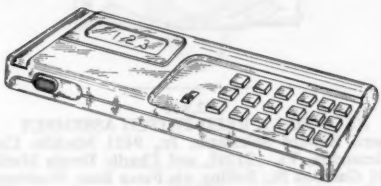
232,833
ELECTRONIC CALCULATING MACHINE
Isao Kitai and Masafumi Yamagami, Osaka, Japan, assignors to Sharp Kabushiki Kaisha (Sharp Corporation), Osaka, Japan
Filed Jan. 22, 1973, Ser. No. 325,564
Claims priority, application Japan July 26, 1972
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

232,834
ELECTRONIC CALCULATING MACHINE
Masafumi Yamagami, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed May 23, 1973, Ser. No. 363,004
Claims priority, application Japan Nov. 25, 1972
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



232,835
ELECTRONIC CALCULATING MACHINE
Isao Kitai and Shigetomo Onishi, Osaka, Japan, assignors to Sharp Kabushiki Kaisha (Sharp Corporation), Osaka, Japan
Filed May 24, 1973, Ser. No. 363,489
Claims priority, application Japan Nov. 25, 1972
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

232,836
ELECTRONIC CALCULATING MACHINE
Isao Kitai, Osaka, Japan, assignor to Sharp Kabushiki Kaisha (Sharp Corporation), Osaka, Japan
Filed Aug. 2, 1973, Ser. No. 385,151
Claims priority, application Japan Feb. 6, 1973
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



232,837
REED FOR A REED SWITCH ASSEMBLY
Bernard Edward Shlesinger, Jr., 9411 Macklin Court, Alexandria, Va. 22309, and Charlie Dwain Mariner, 121 Garrison St., Bolling Air Force Base, Washington, D.C. 20336
Filed July 16, 1973, Ser. No. 379,427
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R

232,838
REED FOR A REED SWITCH ASSEMBLY
Bernard Edward Shlesinger, Jr., 9411 Macklin Court, Alexandria, Va. 22309, and Charlie Dwain Mariner, 121 Garrison St., Bolling Air Force Base, Washington, D.C. 20336
Filed July 16, 1973, Ser. No. 379,428
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R

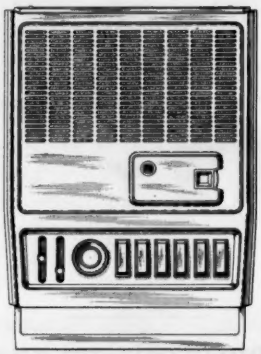
232,839
REED FOR A REED SWITCH ASSEMBLY
Bernard Edward Shlesinger, Jr., 9411 Macklin Court, Alexandria, Va. 22309, and Charlie Dwain Mariner, 121 Garrison St., Bolling Air Force Base, Washington, D.C. 20336
Filed July 16, 1973, Ser. No. 379,429
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R

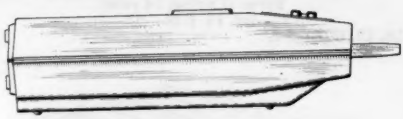
232,840
REED FOR A REED SWITCH ASSEMBLY
Bernard Edward Shlesinger, Jr., 9411 Macklin Court, Alexandria, Va. 22309, and Charlie Dwain Mariner, 121 Garrison St., Bolling Air Force Base, Washington, D.C. 20336
Filed July 16, 1973, Ser. No. 379,430
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R

232,841
REED FOR A REED SWITCH ASSEMBLY
Bernard Edward Shlesinger, Jr., 9411 Macklin Court, Alexandria, Va. 22309, and Charlie Dwain Mariner, 121 Garrison St., Bolling Air Force Base, Washington, D.C. 20336
Filed July 16, 1973, Ser. No. 379,431
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R

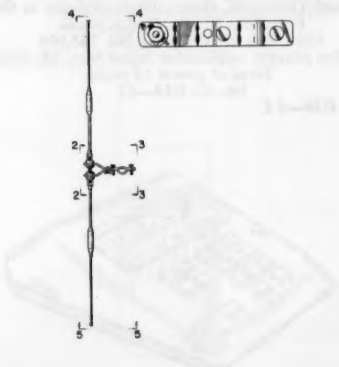
232,842
REED FOR A REED SWITCH ASSEMBLY
Bernard Edward Shlesinger, Jr., 9411 Macklin Court, Alexandria, Va. 22309, and Charlie Dwain Mariner, 121 Garrison St., Bolling Air Force Base, Washington, D.C. 20336
Filed Aug. 20, 1973, Ser. No. 389,863
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R

232,843
PORTABLE CASSETTE TAPE RECORDER
Richard Culbertson, Manlius, and Richard E. Lee, Cazenovia, N.Y., assignors to General Electric Company
Filed Dec. 8, 1972, Ser. No. 313,507
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B

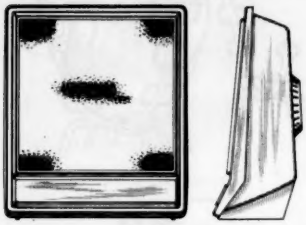




232,844
ANTENNA
Aron Feit, 426 Sandhurst Road, Akron, Ohio 44313
Filed May 18, 1973, Ser. No. 361,522
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 F

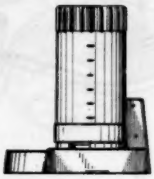


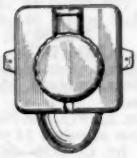
232,845
LOUDSPEAKER
Kenneth R. Wilkes, Marcellus, N.Y., assignor to General Electric Company
Filed Nov. 7, 1973, Ser. No. 413,519
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G



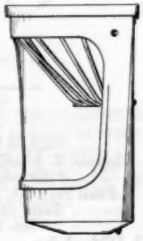
232,846
SALT BLOCK HOLDER
Leonard J. Fusco, Scott Road, Prospect, Conn. 06712, and Robert J. Perazzini, 456 Prospect Road, Waterbury, Conn. 06706
Filed July 21, 1972, Ser. No. 274,091
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13

232,847
FEEDING CONTAINER FOR ANIMALS
Tadashi Okubo, Urawa, Japan, assignor to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan
Filed Feb. 1, 1973, Ser. No. 328,728
Claims priority, application Japan Aug. 9, 1972
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



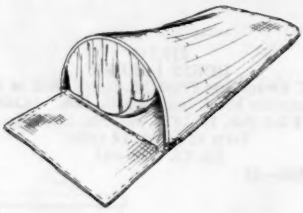


232,848
HORSE FEEDER
John T. Barton and Frank M. Barich, both of 8573 Zionsville Road, Indianapolis, Ind. 46268
Filed Feb. 16, 1973, Ser. No. 333,337
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



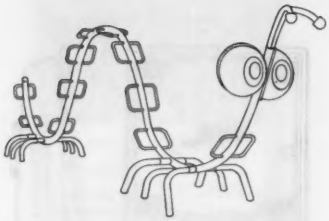
232,849
PET CHAIR
Mary E. Wilson, 30 Emerald Bay, Laguna Beach, Calif. 92651
Filed Sept. 20, 1972, Ser. No. 291,362
Term of patent 14 years
Int. Cl. D30—*06*
U.S. Cl. D30—41

232,850
DOG BED
Betty L. Bloyd, Phoenix, Ariz., assignor to Harry Carr, Phoenix, and Cletus Caroland, Mesa, Ariz., fractional part interest to each
Filed Mar. 2, 1973, Ser. No. 337,756
Term of patent 14 years
Int. Cl. D30—*06*
U.S. Cl. D30—41



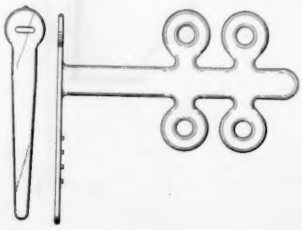
232,851
GLASS MARBLE DOG
Thomas R. Mueller, 3600 W. Rodgers St., Milwaukee, Wis. 53215
Filed Nov. 29, 1972, Ser. No. 310,434
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R

232,852
PLAYGROUND CLIMBER REPRESENTING A CATERPILLAR
Robert S. Wormser, Hillsdale, Mich., assignor to Game Time, Inc., Litchfield, Mich.
Filed Feb. 23, 1973, Ser. No. 335,068
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 H



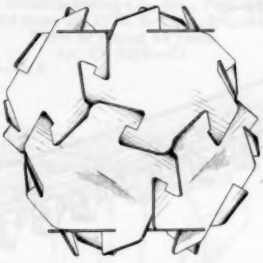
232,853
CRIB TOY MOBILE
Jorma Vennola, Princeton, N.J., assignor to Columbia Broadcasting System, Inc.
Filed Feb. 16, 1973, Ser. No. 333,355
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 J

232,854
CRIB TOY MOBILE
Jorma Vennola, Princeton, N.J., assignor to Columbia Broadcasting System, Inc.
Filed Feb. 16, 1973, Ser. No. 333,356
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 J



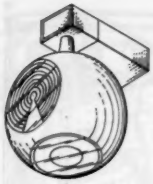
232,855
TOY SCOOP
Jorma Vennola, Princeton, N.J., assignor to Columbia Broadcasting System, Inc.
Filed Feb. 16, 1973, Ser. No. 333,359
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 V

232,856
LAMPSHADE
Richard Lary, Lowell, Mass., assignor to Hilda Erlich, Brooklyn, N.Y.
Filed June 8, 1973, Ser. No. 368,240
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—16 E



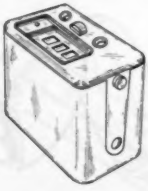
232,857
COMBINED HAND CARRIED LIGHTING UNIT AND MAGNETIC BASE THEREFOR
James W. Lang, 4523 Jennings, Wichita Falls, Tex. 76310
Filed Apr. 26, 1973, Ser. No. 354,521
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R

232,858
EXTERIOR LIGHTING FIXTURE
Donald E. Husby, Fairview Park, Ohio, assignor to Westinghouse Electric Corporation
Filed Oct. 6, 1972, Ser. No. 295,619
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31

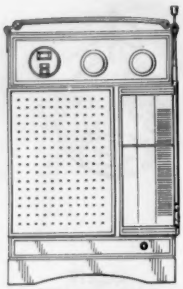


232,859
RAIN GAUGE
Coy W. Colquitt, Jr., 26 Normandy Road 28803, and Harvey A. Klumb, 40 Sleepy Hollow Road 28805, both of Asheville, N.C.
Filed Sept. 11, 1972, Ser. No. 288,168
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R

232,860
ELECTRONIC CLINICAL THERMOMETER
Isao Kitai, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 4, 1972, Ser. No. 312,029
Claims priority, application Japan June 7, 1972
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—7 R

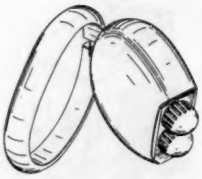


232,861
PORTABLE RADIO
Taka Y. Takei, 145 Wai Yip St., Viet Shing Factory, Kowloon, Hong Kong
Filed June 14, 1972, Ser. No. 262,723
Term of patent 3½ years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

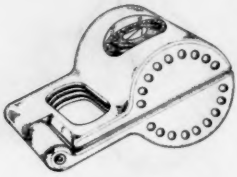


232,862
TELEVISION RECEIVER
Teruo Takashima and Hikaru Asai, Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed July 13, 1972, Ser. No. 271,223
Claims priority, application Japan Jan. 17, 1972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 D

232,863
RADIO RECEIVER
Vong Hoi Tong, Man Wah Bldg. (14th Floor) 18 Man Wui St., Kowloon, Hong Kong
Filed Feb. 20, 1973, Ser. No. 333,712
Claims priority, application Great Britain Aug. 22, 1972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

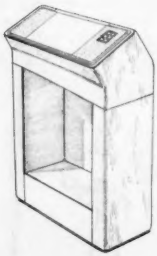


232,864
RADIO RECEIVER
Masanori Hamada, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 21, 1973, Ser. No. 343,410
Claims priority, application Japan Dec. 8, 1972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

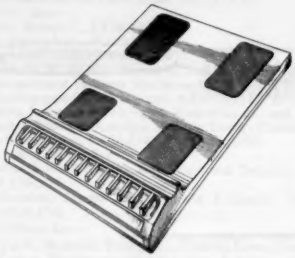


232,865
SWITCH UNIT FOR USE WITH A PIANO KEYBOARD
Brian Claude Jarvis, London, England, assignor to Moviecol Enterprises Limited, London, England
Filed June 5, 1972, Ser. No. 260,032
Claims priority, application Great Britain Dec. 21, 1971
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—9

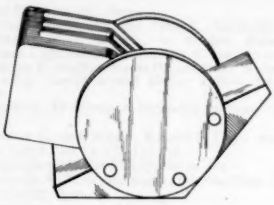
232,866
PRINTER
Samuel J. Mann, Englewood, N.J., assignor to Tele Speed Communication, Inc., Long Island City, N.Y.
Filed June 4, 1973, Ser. No. 366,780
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 B



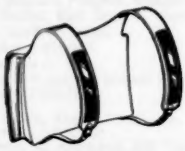
232,867
COMBINED TELEPHONE STAND AND INDEX
Yuen Se Kit, 46 Hoi Yuen Road, 4th Floor, Kwun Tong, Kowloon, Hong Kong
Filed Mar. 27, 1973, Ser. No. 345,257
Claims priority, application Great Britain Oct. 4, 1972
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—1 C



232,868
CARD FILE
Richard P. Scholfield, Peekskill, N.Y., assignor to Wheeldex Manufacturing Co., Inc., Peekskill, N.Y.
Filed Sept. 26, 1972, Ser. No. 292,464
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—2 A

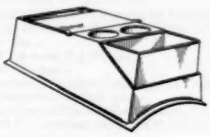


232,869
SIGNALIZED BACKPACK
Masao Yoshimura, Inglewood, Calif., assignor to The Mailbox, Inc., Los Angeles, Calif.
Filed Dec. 6, 1972, Ser. No. 312,782
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1 R

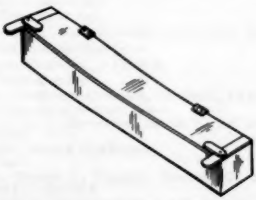


232,870
COMBINED CAR WASTEBASKET AND ACCESSORY HOLDER
James C. Fry, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Dec. 15, 1972, Ser. No. 315,519
Term of patent 14 years
Int. Cl. D12—*16*; D7—*07*
U.S. Cl. D87—1 R

232,871
ARTICLE RECEPTACLE FOR VEHICLES
Elton G. George, 2167 NE. Loop 410, Apt. 10–B 78217, and William T. McCollough, 908 Wiltshire 78209, both of San Antonio, Tex.
Filed Jan. 12, 1973, Ser. No. 323,113
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R



232,872
BOX FOR BINGO ACCESSORIES
Anthony J. Ventimiglia, 24901 E. Jefferson, Apt. 202, St. Clair Shores, Mich. 48080
Filed Feb. 20, 1973, Ser. No. 333,899
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D87—1 R



232,873
HANDBAG
Kathy Lecube, 853 7th Ave., New York, N.Y. 10019
Filed Apr. 12, 1972, Ser. No. 243,540
Term of patent 3½ years
Int. Cl. D3—*01*
U.S. Cl. D87—3 F

232,874
HAIR TRIMMER
Jeffrey M. Koblick, 1291 10th St.,
New Brighton, Minn. 55112
Filed June 15, 1973, Ser. No. 370,343
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF SEPTEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Osakeyhtio: *See—*
Toumaala, Jorma Aarne Kullervo, 3,835,817.

A-T-O Inc.: *See—*
Gray, Robert F., 3,836,106.

A/S Kongsberg Vapenfabrikk: *See—*
Andersen, Gunnar Walter, 3,835,741.

Abbas, Shakir A.; Barile, Conrad A.; Lane, Ralph D.; and Liu, Peter T., to International Business Machines Corporation. Electrically erasable floating gate fet memory cell. 3,836,992, Cl. 357-23.000.

Abbatiello, Leonard A.; Hewgley, Robert E., Jr.; and Turner, Paul C., to United States of America, Atomic Energy Commission. Machine protection system. 3,836,834, Cl. 318-563.000.

Abbott Laboratories: *See—*
Hallas, Robert; Martin, Jerry Roy; and Tadanier, John Soloman, 3,836,519.
Schleicher, Joseph Bernard; and Roderick, William Rodney, 3,836,650.

Abe, Katuhiro: *See—*
Noguchi, Masaaki; Yanagioka, Hiroshi; Kanai, Toshio; Nishiguchi, Kazuo; Hashimoto, Hideo; Abe, Katuhiro; Masuko, Tomio; Mahino, Zenichi; and Kogawa, Yosio, 3,836,630.

Abe, Noboru: *See—*
Kobashi, Toshiyuki; and Abe, Noboru, 3,836,616.

Abe, Wataru; Muto, Akio; and Terada, Yasuyuki, to Oiles Kogyo Kabushiki Kaisha. Solid lubricant. 3,836,466, Cl. 252-12.000.

Abele, Manfred: *See—*
Roos, Ernst; Abele, Manfred; Nast, Roland; Kempermann, Theo; and Schubart, Rudiger, 3,836,562.

Abramov, Leonid Mikhailovich: *See—*
Gutman, Anatoly Lvovich; Prefsman, Vladimir Alexandrovich; Abramov, Leonid Mikhailovich; and Shokurov, Jury Stepanovich, 3,836,273.

ACF Industries, Incorporated: *See—*
Fossett, Wallace Lee, 3,836,203.

Achsel, Eberhard; and Sommer, Siegfried, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of film and fiber-forming polyesters. 3,836,574, Cl. 260-475.00p.

Acrometal Products, Inc.: *See—*
Mozina, Henry F.; and Blue, Frank L., 3,836,093.

Adam, Marie Henri Hubert, to Societe Anonyme l'Eclairage Technique. Light fixtures. 3,836,954, Cl. 240-25.000.

Adams, James E.; Becker, James H.; and Haas, Werner E. L., to Xerox Corporation. Liquid crystal display system. 3,836,230, Cl. 350-160.0lc.

Adams, John Q., IV. Bandage dispensing package. 3,835,992, Cl. 206-390.000.

Adams, Kevin L.; and Wright, Ronald S. Three man chess game apparatus. 3,836,149, Cl. 273-131.0ab.

Addressorgraph-Multigraph Corporation: *See—*
Rosenstein, William; and Booth, Thomas Allan, 3,836,918.

AE & CI Limited: *See—*
Oliver, George Albert, 3,836,884.

Aerojet-General Corporation: *See—*
Halasz, Stephen J.; and Winston, Charles D., 3,836,795.

Aerolite Electronics Corporation: *See—*
Matto, Victor G.; and Schubert, Howard C., 3,836,901.

AGA Aktiebolag: *See—*
Almqvist, Lars Ebbe; and Timmer, Floris, 3,836,780.

Agency of Industrial Science & Technology: *See—*
Kataoka, Shoei; Hashizume, Nobuo; Tomizawa, Kazutaka; Morisue, Mititada; and Komamiya, Yasuo, 3,836,989.

AGFA-Gevaert AG: *See—*
Basu, Prithwis; Neumann, Guenter; and Gaudek, Jani, 3,835,745.

AGFA-Gevaert Aktiengesellschaft: *See—*
Hartwig, Karl; and Vossnacke, Juergen, 3,836,322.
Koleff, Boris; and Nagel, Erich, 3,836,928.
Steinberger, Siegfried; Pflugbell, Mathias; Nagel, Erich; Baasner, Wilhelm; Dreher, Karl; Englert, Werner; Ehrengruber, Paul; and Fleck, Adolf, 3,836,060.
Weinert, Volker, 3,836,247.

Agfa-Gevaert N.V.: *See—*
Stievenart, Emile Frans; Van Bouwel, Leo Paul; and Plessers, Hendrik Sylvester, 3,836,783.

Agnes, Eisas: *See—*
Dietz, Kurt; Lenert, August; Silbermann, Karl; Appelt, Gunther; and Elsas, Adolf, 3,836,803.

Ahlborg, Leif Arne, to Alfa-Laval AB. Gas treatment apparatus. 3,835,624, Cl. 55-220.000.

Ahrens, Claude W. Resiliently tiltable playground apparatus. 3,836,140, Cl. 272-54.000.

Aiello, Salvatore F.: *See—*
Olson, Eugene D.; and Aiello, Salvatore F., 3,836,025.

Aine, Harry E. Trailerable boat for a camper and method for transferring the camper. 3,835,491, Cl. 9-1.00t.

Aiphone Kabushiki Kaisha: *See—*
Ichikawa, Shigemasa, 3,836,718.

Air-Shields, Inc.: *See—*
Grosholz, James R.; Crowley, Charles L.; and Hutter, Charles G., 3,836,287.

Airfix Industries Limited: *See—*
Sutch, Brian Leo Chudleigh, 3,836,063.

Ajinomoto Co., Inc.: *See—*
Yasuda, Naohiko; Ariyoshi, Yasuo; and Sato, Naotake, 3,836,545.

Akamatsu, Mitsuhiro: *See—*
Kinoshita, Yoshio; and Akamatsu, Mitsuhiro, 3,836,945.

Akiyama, Seikichi; Kozuka, Hirotsugu; and Megumi, Koichi, to Hitachi, Ltd. Method for improving transparency of gadolinium molybdate single crystal. 3,836,632, Cl. 423-263.000.

Akopian, Vladimir Amayakovich; and Chatinian, Jury Smbatovich. Power capacitor section. 3,836,830, Cl. 317-261.000.

Aktiebolaget Bofors: *See—*
Ergon, Rolf Otto Torbjorn, 3,836,949.

Aktien-Gesellschaft "Weser": *See—*
Vernede, Louis Antoine; Nitzki, Leopold; Liedke, Heinrich; and Schror, Friedrich, 3,835,802.

Aktieselskabet de Danske Sukkerfabrikker: *See—*
Bruniche-Olsen, Henning Anton, 3,836,337.

Albany International Corporation: *See—*
McConaughy, David F., 3,836,428.

Albers, James C.; Pfenning, Gerald E.; and Anderson, Adrain P., to Shell Oil Company. Marine riser orientation device. 3,835,924, Cl. 166-.500.

Alcan Aluminum Corporation: *See—*
Boltz, Duane A.; Gardner, James J.; and Hautau, Charles F., 3,835,620.

Alcan Research and Development Limited: *See—*
Dewing, Ernest William, 3,836,357.

Alco Standard Corporation: *See—*
Niemeyer, Robert W., 3,836,700.

Alexander, Charles F., Jr., to Brunswick Corporation. Torsion bar stabilizing system for snowmobiles. 3,835,947, Cl. 180-5.00r.

Alfa-Laval AB: *See—*
Ahlborg, Leif Arne, 3,835,624.

Algor, Marshall M.: *See—*
Arsem, Collins; and Algor, Marshall M., 3,836,963.

Algoship International Limited: *See—*
Campbell, George Thomas Richardson, 3,835,803.

Allgeyer, David F. Container skirt. 3,836,041, Cl. 220-85.00r.

Allgon Antenn AB: *See—*
Cassel, Erland, 3,836,975.

Allied Chemical Corporation: *See—*
Barton, Oliver A.; and Murphy, Kevin P., 3,836,474.
Bhuta, Mahendra; and Sacks, William, 3,836,620.

Allis-Chalmers Corporation: *See—*
Redfern, Calvin E., 3,836,737.
Rosendahl, John R.; Lay, Willard W.; and Harrer, Paul H., 3,835,629.
Weltmer, Wilton W., 3,836,126.

Almqvist, Lars Ebbe; and Timmer, Floris, to AGA Aktiebolag. Device for spark discharge chamber employing segmented cathode. 3,836,780, Cl. 250-385.000.

Alps Electric Co., Ltd.: *See—*
Koizumi, Yasumi, 3,836,881.

Alt, Hartmuth; deceased (by Alt, Ortwin Franz Felix; and Beyer, Gundrun Anneliese nee Alt; executors); Clasen, Hermann; and Cramer, Jurgen, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for manufacture of phenylhydrazine 3,836,440, Cl. 204-74.000.

Alt, Ortwin Franz Felix: *See—*
Alt, Hartmuth; Clasen, Hermann; and Cramer, Jurgen, 3,836,440.

Alta Industries, Incorporated: *See—*
Ropiequet, Richard L., 3,836,416.

Althausen, Ferdinand: *See—*
Osinsky, Ulrich; and Althausen, Ferdinand, 3,836,110.

Aluminum Company of America: *See—*
Staley, James T.; Hunsicker, Harold Y.; and Brown, Robert H., 3,836,405.
Stillwagon, James E., 3,836,064.

Alvey, Inc.: *See—*
Dawson, George J.; Hannum, Kenneth O.; and Himmelman, Gerald L., 3,836,018.

Amann, Charles A., to General Motors Corporation. Gas turbine unloader. 3,835,642, Cl. 60-39.16r.

Ambac Industries, Inc.: *See—*
Butterfield, Donald B.; and Marchetti, Albert A., 3,836,080.
Amberger, Ronald F.; and Mizikar, David M., to Carrier Corporation. Mounting structure for vibration detecting probe. 3,835,696, Cl. 73-70.000.
Amchem Products, Inc., mesne: *See—*
Cooke, Anson R.; Jacobs, Richard L.; and Compton, Eli Dee, 3,836,351.
Amelio, Gilbert F.; and Salsbury, Phillip J., to Fairchild Camera and Instrument Corporation. Uniplanar CCD structure and method. 3,836,409, Cl. 148-187.000.
American Air Filter Company, Inc.: *See—*
Kline, Richard L., 3,835,623.
American Cyanamid Company: *See—*
Bernady, Karel Francis; Poletto, John Frank; and Weiss, Martin Joseph, 3,836,581.
Booth, Robert Ben, 3,836,200.
Buell, Bennett George, 3,836,505.
Grayson, Martin; and Keough, Patricia Tarpey, 3,836,587.
American Cynamid Company: *See—*
Kobashi, Toshiyuki; and Abe, Noboru, 3,836,616.
American Gas Furnace Company: *See—*
Shaefer, Frederick C.; Korzeb, Frank; and Bayly, William I., 3,836,324.
American Hoechst Corporation: *See—*
Wilkinson, Richard C.; and Hoffmann, Hermann, 3,836,517.
American Home Products Corporation: *See—*
Bruce, William F., 3,836,580.
Freed, Meier E.; and Potoski, John R., 3,836,670.
Kim, Dong H.; and Santilli, Arthur A., 3,836,533.
Santilli, Arthur A.; Kim, Dong H.; and Fieber, Richard A., 3,836,529.
Santilli, Arthur A.; Scotese, Anthony C.; and Kim, Dong H., 3,836,532.
Stevens, Robert T., 3,836,618.
Teller, Daniel M.; Guinosso, Charles J.; Bell, Stanley C.; and Fenichel, Richard L., 3,836,639.
American Maize-Products Company: *See—*
Freck, James A.; and Kondrot, Leonard V., 3,836,677.
American National Housing Corporation: *See—*
Padula, Arthur H.; Meyer, William G.; and Hollowell, John V., 3,835,600.
American Parking Company, Inc.: *See—*
Craig, John C., Jr., 3,836,069.
Amerock Corporation: *See—*
Anderson, Lloyd L.; and King, Richard J., 3,835,585.
Ammann, Eugene O.; and Yarborough, Joe Michael, to GTE Sylvania Incorporated. Q-switched laser mode selection system. 3,836,866, Cl. 331-94.50q.
Ammazzalorso, Mario: *See—*
Horst, Wilfried; Coldewey, Heiko; Ammazzalorso, Mario; and Schuppler, Emil, 3,835,911.
AMP Incorporated: *See—*
Lawson, Gustaf Rudolph, 3,836,944.
Pass, Raymond Vincent, 3,836,753.
Yeager, Marvin Leo, 3,836,947.
Anaconda Company, The, mesne: *See—*
Bray, Robert S., 3,836,360.
Ling, Ting H.; Wade, Robert M.; and Solomon, Marwich, H., 3,836,482.
Andersen, Gunnar Walter, to Sentralinstitutt for industrielli forskning and A/S Kongsberg Vapenfabrikk. Device for cutting sheet material. 3,835,741, Cl. 83-71.000.
Andersen, Norman: *See—*
Sagi, Zsigmond L.; Comer, Robert C.; Andersen, Norman; Burtha, John R.; and Pertchik, Samuel, 3,835,990.
Anderson, Adrain P.: *See—*
Albers, James C.; Pfenning, Gerald E.; and Anderson, Adrain P., 3,835,924.
Anderson, Emmett R., to Applied Materials, Inc. Temperature controlled profiling heater. 3,836,751, Cl. 219-411.000.
Anderson, Gordon C.; and Brooks, Frank E., to Soco-Lowell Corporation. Spindle mounting. 3,835,634, Cl. 57-130.000.
Anderson, Lloyd L.; and King, Richard J., to Amerock Corporation. Self-closing hinge. 3,835,585, Cl. 49-398.000.
Anderson, Robert Alfred. Underwater breathing apparatus. 3,835,852, Cl. 128-146.500.
Anderson, Robert L., Jr., to Essex International, Inc. Digital engine control apparatus and method. 3,835,819, Cl. 123-32.0ea.
Andersson, Sven Ingemar, to Jeppsson, Torsten, AB and Svenska Agghandelsforbundet Foren U.P.A. Egg cartons. 3,836,067, Cl. 229-44.00r.
Ando, Tetsuo; and Matsumoto, Hiroyuki, to Sony Corporation. Digital-to-analog converter circuit. 3,836,906, Cl. 340-347.0da.
Andrews, Harry N.: *See—*
Frisch, Erling; and Andrews, Harry N., 3,836,429.
Frisch, Erling; and Andrews, Harry N., 3,836,430.
Angstadt, Howard P., to Sun Oil Company. Method for the oxidation of hydrocarbons. 3,836,589, Cl. 260-610.00b.
Annand, Robert R.: *See—*
Oude Alink, Bernardus A.; Annand, Robert R.; and Redmore, Derek, 3,835,927.
Anthony, Gene H.: *See—*
Jamison, Sauders E.; and Anthony, Gene H., 3,836,615.
Antonenko, Grigory Semenovich; Badamian, Avetik Artashesovich; Margulis, Grigory Borisovich; Moroz, Ilya Alexandrovich; and Shitsman, Mikhail Borisovich. Device for corrugation of strips. 3,835,689, Cl. 72-385.000.
Anvar Agence Nationale de Valorisation de la Recherche: *See—*
Darpentigny, Charles; Lesserteur, Michel; Chatillon, Viry; and Lux, Daniel, 3,836,047.
Aoki, Masayuki: *See—*
Kiritani, Masataka; Matsukawa, Hiroharu; and Aoki, Masayuki, 3,836,383.
Appelt, Gunther: *See—*
Dietz, Kurt; Lenert, August; Silbermann, Karl; Appelt, Gunther; and Elsas, Adolf, 3,836,803.
Appleton, Anthony Derek; and Tinlin, Frank, to International Research & Development Company, Ltd. Superconducting dynamo-electric machines. 3,835,663, Cl. 62-505.000.
Applied Materials, Inc.: *See—*
Anderson, Emmett R., 3,836,751.
Aprahamian, Robert: *See—*
Bhuta, Pravin G.; Johnson, Robert L.; Graham, Douglas J.; and Aprahamian, Robert, 3,836,950.
Aquarium Systems, Inc.: *See—*
Kelley, William E., 3,835,711.
Aralt, Per Tybring, to Jebsen, Kristian G. Assembly for unloading powdered or similar material from a ship's hold. 3,836,019, Cl. 214-14.000.
Arato, Laszlo. Craft washing plant. 3,835,498, Cl. 15-21.00e.
Arcadia Refining Company: *See—*
Hix, Charles M., Jr., 3,835,653.
Archambault, Jean: *See—*
Grelat, Maurice; and Archambault, Jean, 3,836,548.
Arens Controls, Inc.: *See—*
Gregory, Ted, 3,835,726.
Argus Engineering Company: *See—*
Costello, Bernard J., 3,836,745.
Aritaki, Hirakazu: *See—*
Matsuda, Kazuo; Tanaka, Yoshiaki; and Aritaki, Hirakazu, 3,836,493.
Ariyoshi, Yasuo: *See—*
Yasuda, Naohiko; Ariyoshi, Yasuo; and Sato, Naotake, 3,836,545.
Arkana Limited: *See—*
Harper, Ronald Ernest; and Mole, Michael James, 3,835,610.
Arkell, Frank J., to Motorola, Inc. Visual display system. 3,836,890, Cl. 340-172.500.
Armour-Moore Marine Service Limited: *See—*
Getgen, Lawrence E., 3,836,720.
Armstrong Cork Company: *See—*
Weaver, John B., 3,836,297.
Arnold, Harold E. Anti-pollution exhaust burner and muffler for internal combustion engines. 3,836,338, Cl. 23-277.00c.
Arsem, Collins; and Algor, Marshall M., to United States of America, Army. Transistor oscillator-detector for proximity fuzes. 3,836,963, Cl. 343-7.0pf.
Arthur, George; and Brown, Derek James, to International Research & Development Company Limited. Cutting tools. 3,835,734, Cl. 76-101.00a.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Nonaka, Kohei; Tanaka, Masaho; Maki, Takeshi; Harada, Ikuo; and Hamasaki, Masafumi, 3,836,168.
Yano, Nubumitsu; Fukushima, Masao; Fukinbara, Itaru; Kishi, Masanori; and Kimura, Kazuyoshi, 3,836,531.
Yasui, Koichi; Yamamoto, Kazuo; Itami, Kazuo; Fujisawa, Kiyoshi; and Sasaki, Toshio, 3,836,336.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Kawasaki, Masahiro, 3,836,924.
Mori, Chiharu, 3,836,921.
Asano, Tetsumasa; Takamiya, Hiroshi; and Morimoto, Yoshinobu, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for controlling the speed and spacing of vehicles. 3,835,950, Cl. 180-98.000.
Ash, Eric Albert, to National Research Development Corporation. Apparatus for examining the surface of an object using electromagnetic radiation. 3,836,787, Cl. 250-572.000.
Ashland Oil, Inc.: *See—*
Kovach, Stephen M.; Patrick, Ralph E.; and Kmecak, Ronald A., 3,836,453.
Taft, David D.; and Schmidt, Roger A., 3,836,491.
Ashland Optical Corporation: *See—*
Binder, Joseph, 3,836,111.
Atlantic Richfield Company: *See—*
Connor, James E., Jr.; Rieve, Robert W.; and Shalit, Harold, 3,836,603.
McEntire, Robert H., 3,835,939.
Atlas Copco Aktiebolag: *See—*
Gustavsson, Tommy Henning Bruno; Karden, Karl Gosta; and Westerberg, Sven Peter Jonas, 3,836,752.
Lagerstedt, John Arne; and Persson, Jan Edvard, 3,835,936.
Schoeps, Knut Christian; and Gustavsson, Tommy Henning Bruno, 3,835,934.
Audi NSU Auto Union Aktiengesellschaft: *See—*
Steinwart, Johannes; and Rup, Max, 3,836,294.
Audivox, Inc.: *See—*
Johanson, Donald L.; and Stutz, Rolf, 3,836,732.
Auerbach, Seymour. Light fixture. 3,836,766, Cl. 240-73.0da.
Aukland, Jerry C.: *See—*

Conway, William H.; and Aukland, Jerry C., 3,836,972.
Ault, Alfred S.; Johnson, Le Roy A.; and Van Dolah, Harry J., to Eagle-Picher Industries, Inc. Method of preparing porcelain enamel frit for dry process enameling. 3,836,373, Cl. 106-48.000.
Austin, Glenn M.: *See—*
Seiferth, Oscar E.; Austin, Glenn M.; and Grace, Daniel C., 3,836,039.
Austin, Richard A., to Valley Bank and Trust Company, mesne. Feed apparatus. 3,836,028, Cl. 214-338.000.
Australia, Commonwealth of; c/o the Department of Civil Aviation: *See—*
Partridge, Frank Bernard Roy, 3,836,259.
Automobiles M. Berliet: *See—*
Bernard, Michel, 3,835,728.
Automotive Products Limited: *See—*
Bainbridge, Wilfred Nicholas; and Pitcher, Robert Hazell, 3,836,166.
Autoquip Corporation: *See—*
Richards, Lawrence I., 3,835,957.
Avco Corporation: *See—*
Junker, Arnold E., 3,836,216.
AVM Corporation: *See—*
Signore, James C., 3,836,223.
Baasner, Wilhelm: *See—*
Steinberger, Siegfried; Pflugbell, Mathias; Nagel, Erich; Baasner, Wilhelm; Dreher, Karl; Englert, Werner; Ehrengruber, Paul; and Fleck, Adolf, 3,836,060.
Babcock-Hitachi: *See—*
Kobayashi, Hiroshi; and Okada, Goro, 3,836,321.
Babecki, Robert J.: *See—*
Specht, Thomas F.; and Babecki, Robert J., 3,835,691.
Babel, Louis: *See—*
Peytavin, Pierre; and Babel, Louis, 3,835,740.
Babuliak, Josef: *See—*
Schroeder, Guenter; Gaenzler, Wolfgang; Uddrich, Peter; and Babuliak, Josef, 3,836,551.
Bach, John W.: *See—*
Ross, William A.; Bach, John W.; and Olson, Warren E., 3,835,779.
Badamian, Avetik Artashesovich: *See—*
Antonenko, Grigory Semenovich; Badamian, Avetik Artashesovich; Margulis, Grigory Borisovich; Moroz, Ilya Alexandrovich; and Shitsman, Mikhail Borisovich, 3,835,689.
Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Jun, Mong-Jon; Penzien, Klaus; and Wegner, Gerhard, 3,836,368.
Matthias, Guenther; Schulz, Gerhard; Kasper, Werner; and Feind, Klaus, 3,836,583.
Roller, Hermann; Stritzinger, Heinz; Hartmann, Job-Werner; Falk, Roland; and Balz, Werner, 3,836,395.
Badische Anilin-& Soda-Fabrik Aktiengesellschaft: *See—*
Kirner, Uwe, 3,836,475.
Ricker, Ernst; Sander, Bruno; Schmidt, Franz; Schwartz, Erich; Sperber, Heinrich; and Wilhelm, Hans, 3,836,605.
Bailey, James D.: *See—*
Brown, James B.; and Bailey, James D., 3,835,834.
Bainbridge, Wilfred Nicholas; and Pitcher, Robert Hazell, to Automotive Products Limited. Pneumatic suspension systems for vehicles. 3,836,166, Cl. 280-124.00f.
Baird Chemical Industries, Inc.: *See—*
Dadekian, Zaven A., 3,836,669.
Baker, Don R.; and Teach, Eugene G. Sulfonyloxy bromoacetanilides and their utility as biocides. 3,836,564, Cl. 260-456.00a.
Baker, Gordon W. Fishing game. 3,836,142, Cl. 273-1.00m.
Baland, Raymond W. Impact switch with inertia operated toggle linkage actuator mechanism. 3,836,738, Cl. 200-61.45r.
Balda-Werke Photographische Gerate Und Kunststoff GmbH & Co. KG: *See—*
Lange, Karl-Heinz, 3,836,985.
Baldwin, John J.; and Novello, Frederick C., to Merck & Co., Inc. Trisubstituted imidazoles in the treatment of gout. 3,836,658, Cl. 424-267.000.
Baldwin, Roger A.; Bowerman, Paul D.; and Lucid, Michael F., to Kerr-McGee Chemical Corporation. Simultaneous recovery of vanadium and uranium from oxidezed wet process acid. 3,836,476, Cl. 252-301.10r.
Ballamy, Leslie Mark. Crank-driven reciprocating mechanisms. 3,835,716, Cl. 74-40.000.
Ballard, Donnell A.: *See—*
Denigan, Edward P., Jr.; and Ballard, Donnell A., 3,835,930.
Balz, Werner: *See—*
Roller, Hermann; Stritzinger, Heinz; Hartmann, Job-Werner; Falk, Roland; and Balz, Werner, 3,836,395.
Banachowski, Stanley: *See—*
Taylor, Victor E.; Choate, Wallace R.; Banachowski, Stanley; Johnson, Robert W.; and Faison, Robert C., 3,835,743.
Barasch, Stephen: *See—*
Funk, John W.; Merlino, Eugene L., Jr.; and Woods, Daniel J., 3,835,771.
Barber, Albert John; Massey, Derek James Rowland; McCartney, James; and Winterbottom, Kenneth, to Ciba-Geigy AG. Treatment of fibres. 3,836,390, Cl. 117-138.80a.
Bargain, Michel, to Rhone-Poulenc S.A. Organopolysiloxane compositions. 3,836,489, Cl. 260-18.00s.
Bargstedt, Gerd. Apparatus for transferring articles between a conveyor and a stack. 3,836,017, Cl. 214-6.0fs.
Barile, Conrad A.: *See—*
Abbas, Shakir A.; Barile, Conrad A.; Lane, Ralph D.; and Liu, Peter T., 3,836,992.
Barker, Bernard A.; and Daggett, Ronald L., to Franklin Equipment, Inc. Float valve assembly. 3,835,882, Cl. 137-445.000.
Barmag-Barmer Maschinenfabrik Aktiengesellschaft: *See—*
Schippers, Heinz, 3,835,631.
Barnett, Thomas A., to Monsanto Company. Steel tire cord assembly. 3,836,426, Cl. 161-170.000.
Barr, Courtland Hilyard, Jr. Multi-chambered syringe. 3,835,855, Cl. 128-218.00m.
Barre, Wade E.; and Orbanic, Robert S., to GTE Sylvania Incorporated. Fluorescent lighting assembly. 3,836,939, Cl. 339-56.000.
Barreca Products Co.: *See—*
Penniman, Robert; and Snelling, Richard A., 3,836,058.
Barrett, Arthur Michael; Carter, John; Hull, Roy; Le Count, David James; and Squire, Christopher John, to Imperial Chemical Industries Limited. Alkanolamine derivatives for producing β-adrenergic blockade. 3,836,671, Cl. 424-324.000.
Barrett, James H., Jr.: *See—*
Barrett, James H., Jr.; and Marcussen, Lee R. (said Marcussen assor. to said), 3,836,938.
Barrett, James H., Jr.; and Marcussen, Lee R., said Marcussen assor. to said Barrett, James H., Jr. Safety electrical plug release mechanism. 3,836,938, Cl. 339-45.00r.
Barringer, Anthony Rene, to Barringer Research Limited. Optical correlator with optimized maximum and minimum correlation masks. 3,836,254, Cl. 356-74.000.
Barringer Research Limited: *See—*
Barringer, Anthony Rene, 3,836,254.
Barry, Robert S. Firescreen support. 3,836,107, Cl. 248-251.000.
Bartlo, Louis J.; and Bomberger, Howard B., Jr., to RMI Company. Method of forming tapered metal pieces. 3,835,526, Cl. 29-470.900.
Barton, Oliver A.; and Murphy, Kevin P., to Allied Chemical Corporation. Novel non-flammable azeotrope solvent compositions. 3,836,474, Cl. 252-171.000.
Bartsch, Friedrich F., to Sybron Corporation. Aromatic alcohol-aromatic aldehyde carrier dyeing of aromatic polyamides. 3,836,327, Cl. 8-173.000.
Basf Wyandotte Corporation: *See—*
Schmolka, Irving R., 3,836,637.
Basile, Mario. Method of treating soil for controlling termites and the like. 3,835,578, Cl. 43-132.000.
Bass, Thomas R. Holding and support device for replaceable bags having a segmented lid. 3,836,037, Cl. 220-35.000.
Bassi, Dario, to Verdol S.A. Loom jacquards of the double-lift type. 3,835,895, Cl. 139-65.000.
Basu, Prithwis; Neumann, Guenter; and Gaudek, Jani, to AGFA-Gevaert AG. Arrangement for unloading a film cartridge. 3,835,745, Cl. 83-285.000.
Bates, Clayton W.; and Wallace, Richard A. Activated iodide X-ray image intensifier screen. 3,836,784, Cl. 250-483.000.
Batlles, Jorge Ferrer; Salat, Carlos Ferrar; and Riera, Juan Colome, to Laboratories Ferrer S. L. Therapeutic composition and method of treating patients therewith. 3,836,668, Cl. 424-319.000.
Battle, Billy J., to United States Pipe and Foundry Company. Flange joint. 3,836,183, Cl. 285-363.000.
Bauer Bros., Co., The: *See—*
Moore, William P., 3,835,999.
Bauer, Richard J., to General Motors Corporation. Dry cleaning filter element assembly. 3,836,005, Cl. 210-266.000.
Baum, Melvin E., to Koppers Company, Inc. Unsaturated polyester resins. 3,836,606, Cl. 260-861.000.
Bausch & Lomb Incorporated: *See—*
Wrue, Richard J., 3,835,596.
Bausenbach, Arthur E.; Seiple, Richard T.; and Palopoli, Frank D., to Sanitary Controls, Inc. Winch follower assembly. 3,836,123, Cl. 254-186.00r.
Bawa, Jaspal S., to Thomas & Betts Corporation. Insulating sleeve for metallic conduit. 3,836,698, Cl. 174-83.000.
Baxendale, Albert Edward; and Young, Edward John, to Brico Engineering Limited. Internal combustion engines. 3,835,825, Cl. 123-97.00b.
Bayer Aktiengesellschaft: *See—*
Bockmann, August; Rudolph, Hans; and Nouvertne, Werner, 3,836,490.
de Montigny, Armand; Schnurrbusch, Karl; Seyfried, Klaus; and Noll, Walter, 3,836,558.
Hagemann, Hermann; Wingler, Frank; and Pollheide, Dieter, 3,836,604.
Hahnkamm, Volker; Rademachers, Jakob; Henkel, Hanno; Brandle, Karl; and Schafer, Kurt, 3,836,378.
Radlmann, Eduard; and Nischk, Gunther, 3,836,508.
Regel, Erik K.; Buchel, Karl-Heinz; and Plempel, Manfred, 3,836,663.
Regel, Erik K.; Buchel, Karl-Heinz; and Plempel, Manfred, 3,836,664.
Roos, Ernst; Abele, Manfred; Nast, Roland; Kempermann, Theo; and Schubart, Rudiger, 3,836,562.
Schirmar, Hermann; and Peilstocker, Gunter, 3,836,499.
Tacke, Peter; Haupt, Heinrich; Blank, Heinz Ulrich; Bockmann, August; and Rudolph, Hans, 3,836,501.
Telle, Otto; Molls, Hans-Heinz; and Fetting, Karl-Ernst, 3,836,649.
Bayly, William I.: *See—*

Shaefer, Frederick C.; Korzeb, Frank; and Bayly, William I., 3,836,324.

Bazell, Seymour: *See—*
Goldberg, Edward M.; and Bazell, Seymour, 3,835,863.

Bean, John B. Dwelling space air condition control and air change control system. 3,835,758, Cl. 98-33.000.

Beasley, Donald L.: *See—*
Townsens, Ray T.; and Beasley, Donald L., 3,835,503.

Beauvais, Max P.; and Breil, Jacques, to Reynolds Metals Company. Surface sterilization. 3,836,328, Cl. 21-56.000.

Becker, Dustin J., to Lorain Products Corporation. A-C voltage detector. 3,836,790, Cl. 307-235.00r.

Becker, James H.: *See—*
Adams, James E.; Becker, James H.; and Haas, Werner E. L., 3,836,230.

Beckman Instruments, Inc.: *See—*
Diamond, Allen M., 3,836,861.

Beckmann, Rudolf; and Seelmann-Eggebert, Dietrich, to Volkswagenwerk Aktiengesellschaft. Internal combustion engine. 3,835,826, Cl. 123-103.00e.

Becky, Raymond, to TUC Industries, Inc. Controlled apparatus for silicon controlled rectifiers. 3,836,839, Cl. 323-20.000.

Becton Dickinson and Company: *See—*
Huston, Paul O., 3,836,079.

Beggs, Donald, to Mildrex Corporation, mesne. Apparatus for cooling a moving bed of solid, gas permeable particles. 3,836,131, Cl. 266-20.000.

Behnke, Arnold F., to Kay-Brunner Steel Products, Inc. Swivel assembly. 3,836,268, Cl. 403-165.000.

Behrens, Dieter; and Wache, Lothar, to Siemens Aktiengesellschaft. Control circuit for preventing the response of a programmed controller to simultaneously generated control signals. 3,836,859, Cl. 328-75.000.

Behrens, Herbert; and Wohlbier, Gunther, to Olympia Werke A.G. Device for moving a print element carrier in typewriters. 3,835,976, Cl. 197-82.000.

Belart, Juan, to ITT Industries, Inc. Separating valve for an antiskid brake system. 3,836,207, Cl. 303-21.00f.

Belgonucleaire and Centre d'Elude de l'Energie Nucleaire: *See—*
Flipot, Alfred-Jean; Papeleux, Paul; and LaFontaine, Ivan, 3,836,431.

Bell & Howell Company: *See—*
Bookless, George W.; Hertel, Heinz E.; and Kearney, Robert L., 3,836,250.
Hertel, Heinz E.; Kearney, Robert L.; and Weber, Paul E., 3,836,251.
Hertel, Heinz E.; and Konagamitsu, George K., 3,836,984.
Ishikawa, Mitsuo, 3,836,154.
John, Robert Sawyer, Jr., 3,836,248.
Weber, Paul E., 3,836,249.

Bell Canada-Northern Electric Research Limited: *See—*
Zimmermann, Detlef; and Lougheed, James Hugh, 3,836,842.

Bell, Frank W., to Stanadyne, Inc. Shower head with flow control washer. 3,836,083, Cl. 239-572.000.

Bell, Stanley C.: *See—*
Teller, Daniel M.; Guinosso, Charles J.; Bell, Stanley C.; and Fenichel, Richard L., 3,836,639.

Bell Telephone Laboratories, Incorporated: *See—*
Bobeck, Andrew Henry; Geusic, Joseph Edward; and Hagedorn, Bassett, 3,836,898.
Gressitt, Tillman Johnson; Koliss, Peter Paul; and Ramsey, Raymond Bolton, 3,836,696.
Lawrence, Thomas Russell, 3,836,903.
Melchior, Hans, 3,836,243.
Seidel, Harold, 3,836,863.

Beloit Corporation: *See—*
Stafford, Larry O., 3,836,313.

Bender, Klaus, to Daimler-Benz A.G. Windshield wiper. 3,835,499, Cl. 15-250.040.

Bendix Corporation, The: *See—*
McDaniel, George H., 3,836,891.

Bendler, Hellmut: *See—*
Grosch, Ernst; Gawlick, Heinz; Bendler, Hellmut; and Flach, Karl-Egon, 3,836,170.

Bennett, Robert H.: *See—*
Jacobs, Leonard D.; and Bennett, Robert H., 3,835,814.

Bennett, William S., to Singer Company, The. Display of digitally stored image on a spherical viewing surface. 3,836,812, Cl. 315-18.000.

Benoit, Roland A.; and Curran, John, to InterRoyal Corporation. Telescoping novel stand assembly. 3,835,486, Cl. 5-317.00r.

Benton, Robert C. Gravure printing press with endless printing belts. 3,835,775, Cl. 101-151.000.

Beretta, Paolo; and Magnani, Luigi, to Minnesota Mining and Manufacturing Company. Merocyaninic dyes and their use in silver halides photographic emulsions containing the same. 3,836,370, Cl. 96-127.000.

Berglas, Robert E. Strobe Light trigger circuit. 3,836,818, Cl. 315-240.000.

Bergwerksverband GmbH: *See—*
Romey, Ingo; and Koelling, Georg, 3,836,343.

Berlin, Alexandr Zinovievich: *See—*
Perelmutr, Alexandr Semenovich; Berlin, Alexandr Zinovievich; Gorlin, Igor Konstantinovich; and Traxler, Alexandr Gustavovich, 3,836,129.

Bernady, Karel Francis; Poletto, John Frank; and Weiss, Martin Joseph, to American Cyanamid Company. 1-Alkoximino-2-(omega-substituted-alkyl)-2-cyclopentenes. 3,836,581, Cl. 260-566.0ae.

Bernard, James A.; and Brucken, Byron L., to General Motors Corporation. Roll retractor for roller drive mechanism. 3,835,719, Cl. 74-208.000.

Bernard, Michel, to Automobiles M. Berliet. Balancing device for a six crankpin crankshaft. 3,835,728, Cl. 74-603.000.

Berner, Robert E. Pericranial splint and retainer assembly. 3,835,848, Cl. 128-76.00c.

Bernin, Victor M., to Illinois Tool Works Inc. Solid state phase output switch with noise immunity and diagnostic capabilities. 3,836,910, Cl. 340-365.001.

Berns, Harald, to Sehlbach, Herbert, KG. Cincher for packaging straps. 3,835,506, Cl. 24-68.00d.

Berry, Arthur E. Power fishing reel. 3,835,571, Cl. 43-21.000.

Berry, Charles P.: *See—*
Schara, Robert E.; Shoaf, Myron D.; and Berry, Charles P., 3,836,685.

Berst, Jean-Jacques, 1/2% to Berst, Pierre Andre. Track switch with latch. 3,836,771, Cl. 246-448.000.

Berst, Pierre Andre: *See—*
Berst, Jean-Jacques, 3,836,771.

Berstein, Gregor, to Cabot Corporation. Aqueous emulsion paints and pigment bases therefor. 3,836,495, Cl. 260-29.4ua.

Bertin & Cie: *See—*
Croix-Marie, Francis Marie; and Dubois, Daniel Jean-Marie, 3,835,952.

Bertram, August H.; and Miller, Calvin L., to Caterpillar Tractor Company. Quick disconnect device for power trains. 3,835,722, Cl. 74-405.000.

Beschke, Helmut, to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler. Process for the production of copper silicates. 3,836,633, Cl. 423-326.000.

Bethsold, Karl R.: *See—*
Crump, Robert O.; and Bethsold, Karl R., 3,835,521.

Beuter, Hermann: *See—*
Schiebel, Alfred; Kuhn, Falk; Beuter, Hermann; and Planck, Alfred, Jr., 3,835,668.

Beyer, Gundrun Anneliese nee Alt: *See—*
Alt, Hartmuth; Clasen, Hermann; and Cramer, Jurgen, 3,836,440.

Beziat, Bernard, to Societe Nouvelle des Echafaudages Tubulaires Mills. Scaffolding. 3,835,612, Cl. 52-638.000.

Bhuta, Mahendra; and Sacks, William, to Allied Chemical Corporation. Method of forming polyamide-polyethylene composite films. 3,836,620, Cl. 264-171.000.

Bhuta, Pravin G.; Johnson, Robert L.; Graham, Douglas J.; and Aprahamian, Robert, to TRW Inc. Acousto-optical multi-constituent flow monitoring method and apparatus. 3,836,950, Cl. 340-5.00h.

Bickel, John E.; and Gallenberger, Robert J., to United States of America, Navy. Aircraft VLF receiving antenna. 3,836,971, Cl. 343-100.0pe.

Biederman, William, to Orthodontic International Services, Inc. Orthopedic appliance. 3,835,540, Cl. 32-14.00e.

Bielfeldt, Gerlinde: *See—*
Bielfeldt, Heinz, 3,835,566.

Bielfeldt, Heinz; deceased (by Bielfeldt, Gerlinde; Diehl, Christiane; and Bielfeldt, Karsten, heirs), to Sauer, J. P., & Sohn, GmbH. Cylinder breech mechanism for small arms. 3,835,566, Cl. 42-16.000.

Bielfeldt, Karsten, heirs: *See—*
Bielfeldt, Heinz, 3,835,566.

Biesner, Walter: *See—*
Fischer, Wilhelm; Krause, Friedrich; Biesner, Walter; and Sonnenmoser, Hubert, 3,836,688.

Binder, Joseph, to Ashland Optical Corporation. Cylindrical mold for the production of a plurality of optical lenses. 3,836,111, Cl. 249-121.000.

Bingham, Henry, to Hard Metals Limited. Cutting unit for use on rock boring machines. 3,835,944, Cl. 175-364.000.

Bini, Rodney James, to Norman, George, & Co. Pty. Ltd. Connecting means. 3,835,508, Cl. 24-204.000.

Binks Manufacturing Company: *See—*
Krohn, Duane D., 3,836,082.

Bintner, Dennis W.: *See—*
Conrad, Sherman E.; and Bintner, Dennis W., 3,836,076.

Bio-Medical Sciences, Incorporated: *See—*
Sagi, Zsigmond L.; Comer, Robert C.; Andersen, Norman; Burtha, John R.; and Pertchik, Samuel, 3,835,990.

Biological Concepts, Inc.: *See—*
Rudel, Harry W.; and Kincl, Fred A., 3,836,651.

Bischoff, Dieter, to Freudenberg, Carl. Antistatic fabrics. 3,836,422, Cl. 161-154.000.

Bischoff, Friedrich: *See—*
Wiensz, Klaus; and Bischoff, Friedrich, 3,836,627.

Bishton, Albert A., to Dunlop Company Limited, The. Pneumatic tires. 3,835,907, Cl. 152-153.000.

Bisson, Barry A.: *See—*
Shang, Jer-Yu; Bisson, Barry A.; and Wynkoop, Raymond, 3,836,342.

Black and Decker Manufacturing Company, The: *See—*
Howell, Harold George, 3,835,715.
Sides, Daniel Harrison; and Moores, Robert Gordon, Jr., 3,835,935.

Blakeslee, G. S., & Co.: *See—*

Vilen, Erik O., 3,836,003.

Blank, Heinz Ulrich: *See—*
Tacke, Peter; Haupt, Heinrich; Blank, Heinz Ulrich; Bockmann, August; and Rudolph, Hans, 3,836,501.

Blankschein, Werner. Method and apparatus for producing tufts of hair or bristles. 3,836,199, Cl. 300-21.000.

Blevins, Maurice E. Method of translating the location of a predetermined position on one side of a substantially nonferrous structural barrier of a building to an opposite side of said barrier. 3,836,848, Cl. 324-67.000.

Bloedorn, Arthur R.: *See—*
Schneider, Richard F.; and Bloedorn, Arthur R., 3,836,758.

Blue, Frank L.: *See—*
Mozina, Henry F.; and Blue, Frank L., 3,836,093.

Blytas, George C., to Shell Oil Company. Separation of closely related aliphatic hydrocarbons with cation-exchanged offretite zeolite. 3,836,455, Cl. 208-310.000.

Board, Kenneth, to U.S. Philips Corporation. Semiconductor devices. 3,836,988, Cl. 357-3.000.

Bobeck, Andrew Henry; Geusic, Joseph Edward; and Hagedorn, Bassett, to Bell Telephone Laboratories, Incorporated. Magnetic bubble structure for suppression of dynamic bubble conversion. 3,836,898, Cl. 340-174.0tf.

Bochenek, Valerian S., Jr.: *See—*
Peterson, William H.; and Bochenek, Valerian S., Jr., 3,836,023.

Bock, Erich, to Register Systems GmbH. Device for attaching and adjusting flexible printing plates of printing cylinders. 3,835,778, Cl. 101-415.100.

Bockemuehl, Johannes: *See—*
Kreyenberg, Artur, 3,835,885.

Bockmann, August: *See—*
Tacke, Peter; Haupt, Heinrich; Blank, Heinz Ulrich; Bockmann, August; and Rudolph, Hans, 3,836,501.

Bockmann, August; Rudolph, Hans; and Nouvertne, Werner, to Bayer Aktiengesellschaft. Flameproof polycarbonates containing an alkali metal salt soluble in the polycarbonate melt. 3,836,490, Cl. 260-18.0tn.

Boehringer Ingelheim G.m.b.H.: *See—*
Eberhardt, Hans; and Schaefer, Hans, 3,836,665.
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Zeile, Karl; Engelhardt, Albrecht; and Traunecker, Werner, 3,836,666.
Weber, Karl Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,836,652.
Weber, Karl Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, deceased, 3,836,653.

Boenke, Clyde O.; Miller, Murray H.; Levine, Michael R.; Rigotte, Victor H.; Vivian, Weston E.; and Hall, William C. Variable message length data acquistion and retrieval system and method using two-way coaxial cable. 3,836,888, Cl. 340-172.500.

Boerwinkle, Fred P.; and Waxberg, Donald L. Zwitterionic polymer hairsetting compositions and method of using same. 3,836,537, Cl. 260-29.6hn.

Boesch, Roger, to Rhone- Poulenc S.A. Oxasiazolone derivatives. 3,836,539, Cl. 260-307.00a.

Bohm, Eberhard: *See—*
Reh, Lothar; Bohm, Eberhard; and Schoene, Gunter, 3,836,635.

Bolliger, Hans Rudolf: *See—*
Garner, Robert; and Bolliger, Hans Rudolf, 3,836,382.

Boltz, Duane A.; Gardner, James J.; and Hautau, Charles F., to Alcan Aluminum Corporation. Apparatus for stacking panels or the like. 3,835,620, Cl. 53-157.000.

Bomberger, Howard B., Jr.: *See—*
Bartlo, Louis J.; and Bomberger, Howard B., Jr., 3,835,526.

Bond, Donald Spencer; and Holman, John Michael Leigh, to RCA Corporation. Geo-synchronous satellites in quasi-equatorial orbits. 3,836,969, Cl. 343-100.0st.

Bonebrake, Gay M., to TAB Engineers, Inc. Roll-forming process. 3,836,687, Cl. 426-496.000.

Bonnell, Brian P.: *See—*
Hampton, Richard J.; and Bonnell, Brian P., 3,836,376.

Bonomo, Richard S., to Univerferth Manufacturing Company, Inc. Wheel construction. 3,836,202, Cl. 301-39.00r.

Bonvicini, Giacomo, to Fox Motori di CECI Napoleone & C.s.a.s. Ignition system for internal-combustion-micro-engines. 3,836,800, Cl. 310-70.00a.

Bookless, George W.; Hertel, Heinz E.; and Kearney, Robert L., to Bell & Howell Company. Microfilm camera apparatus. 3,836,250, Cl. 355-65.000.

Booth, Robert Ben, to American Cyanamid Company. Conveying polyelectrolyte fluidized aqueous suspensions powdered solids. 3,836,200, Cl. 302-66.000.

Booth, Thomas Allan: *See—*
Rosenstein, William; and Booth, Thomas Allan, 3,836,918.

Borchardt, Hans J. Line release trolling planer. 3,835,573, Cl. 43-43.120.

Borg-Warner Corporation: *See—*
Kurtz, Curtis E., 3,835,846.

Borgmann, Heinz: *See—*
Schonfeld, Peter; Borgmann, Heinz; and Plohn, Gerhard, 3,836,822.

Borrelli, Dominick. Zipper pull. 3,836,189, Cl. 294-1.00a.

Bosch, Robert, Fernsehanlagen GmbH: *See—*
Horneff, Hans, 3,836,860.

Bosch, Robert, GmbH: *See—*
Bottcher, Siegfried; and Speck, Hans-Reimer, 3,836,291.
Knapp, Heinrich, 3,835,828.
Leutner, Volkmar; and Romes, Roman, 3,835,888.
Links, Heinz, 3,835,829.
Schwerin, Gunther, 3,835,966.
Schwerin, Gunther, 3,836,205.
Wurst, Bert, 3,835,733.

Bosse, Frank, to Windmoller & Holscher. Bag-making machine. 3,835,756, Cl. 93-8.0wa.

Botbol, Joseph M. Cleated emergency track. 3,836,075, Cl. 248-14.000.

Bottcher, Siegfried; and Speck, Hans-Reimer, to Bosch, Robert, GmbH. Pump-and-motor unit, particularly for supplying fuel. 3,836,291, Cl. 417-423.000.

Bouniot, Albert: *See—*
Falize, Claude; and Bouniot, Albert, 3,836,576.

Bouniot, Albert, to Rhone-Progil. Process for the manufacture of methyl methacrylate. 3,836,575, Cl. 260-486.00d.

Boussekey, Bernard: *See—*
Retali, Roger; Chielens, Alain; and Boussekey, Bernard, 3,836,103.

Boustany, Kamel; and Coran, Aubert Yaucher, to Monsanto Company. Preparation of discontinuous fiber reinforced elastomer. 3,836,412, Cl. 156-62.200.

Bouy, Pierre; and Collard, Daniel, to Rhone-Progil. Frames for electrolytic cells of the filter-press type. 3,836,448, Cl. 204-270.000.

Bowerman, Paul D.: *See—*
Baldwin, Roger A.; Bowerman, Paul D.; and Lucid, Michael F., 3,836,476.

Bowerman, William R. Game board. 3,836,151, Cl. 273-136.00e.

Bowers, David Lee, to General Electric Company. Body organ stimulator. 3,835,865, Cl. 128-421.000.

Bowker, John Kent, to Itek Corporation. Image standardizer apparatus. 3,836,246, Cl. 355-32.000.

Bowman, Raymond D., to Cavalier Corporation. Circuit for multi-column vending machines having columns arranged for conjoint operation. 3,836,046, Cl. 221-67.000.

Brachet, Max Jacques Roul: *See—*
Lesbros, Andre Jose; and Brachet, Max Jacques Roul, 3,836,339.

Bracka, Bruno W.: *See—*
Mattia, Armand D.; and Bracka, Bruno W., 3,836,101.

Brader, James J., Jr.: *See—*
Griscom, Richard W.; and Brader, James J., Jr., 3,836,674.

Bradick, Rudolph A. Stock stop control assembly. 3,835,683, Cl. 72-36.000.

Bradley, Frank R. Telephone line characteristic measuring instrument. 3,836,735, Cl. 179-175.30r.

Brady, Cyrus T.: *See—*
Burnett, Mackenzie; Brady, Cyrus T.; Duffield, Peter L.; and Houser, Phillip H., 3,836,913.

Brady, W. H., Company: *See—*
Mrozek, James M., 3,836,778.

Braggins, George Roderick Derham; and Pooley, Donald Humphrey, to Wellman Bibby Company Limited, The. Torque limiting device. 3,835,973, Cl. 192-56.00r.

Braidt, Helfried; and Figl, Johann. Shutoff valve with leak indicating means. 3,835,878, Cl. 137-246.130.

Brandle, Karl: *See—*
Hahnkamm, Volker; Rademachers, Jakob; Henkel, Hanno; Brandle, Karl; and Schafer, Kurt, 3,836,378.

Braunschweigische Maschinenbauanstalt: *See—*
Hartmann, Heinrich; Stelter, Siegfried; and Trelewsky, Heinz-Guenter, 3,835,997.

Bray, Richard Nicholas. Drilling apparatus and adaptor assembly for such apparatus. 3,835,943, Cl. 175-173.000.

Bray, Robert S., to Anaconda Company, The, mesne. Method and apparatus for pre-heating and adding master alloy to a copper melt. 3,836,360, Cl. 75-135.000.

Brecht, Carl T., to Senco Products, Inc. Nail and method and apparatus for making same. 3,835,991, Cl. 206-343.000.

Brecht, Heinz: *See—*
Stach, Hans; Hoffmann, Dieter; and Brecht, Heinz, 3,836,552.

Breil, Jacques: *See—*
Beauvais, Max P.; and Breil, Jacques, 3,836,328.

Brendel, Robert: *See—*
Gates, H. Gordon; and Brendel, Robert, 3,835,586.

Brennan, William M.: *See—*
O'Neill, Edward T.; Brennan, William M.; and Kriechbaum, Gerhard K., 3,836,099.

Brewbaker, James L.; Nowak, Robert M.; and Dennis, Kent S., to Dow Chemical Company, The. Stabilized low profile resins. 3,836,600, Cl. 260-836.000.

Brichima S.p.A.: *See—*
Maggioni, Paolo, 3,836,591.

Brico Engineering Limited: *See—*
Baxendale, Albert Edward; and Young, Edward John, 3,835,825.

Bridgestone Cycle Industry Co. Ltd.: *See—*
Ohtani, Kiyoshi, 3,835,963.

Briendell, Gordon D.; and Wuskell, Joseph P., to Quaker Oats Company, The. Alpha, alpha, alpha, alpha-Tetrakis(4-hydroxy-3,5-disubstituted phenyl)xylene. 3,836,590, Cl. 260-619.00a.

Brinkmann, Bernd, to Schering AG. Stabilized adhesive compositions. 3,836,565, Cl. 260-464.000.

Brinza, Joseph E.: *See—*
Stock, Arthur J.; Christofer, Donald E.; and Brinza, Joseph E., 3,835,617.

British Petroleum Company Limited, The: *See—*
Desty, Denis Henry; and Young, Christopher John, 3,836,318.

Broeke, Jan: *See—*
Tristram, Edward W.; and ten Broeke, Jan, 3,836,585.

Broemer, Heinz; Huber, Werner; Meinert, Norbert; and Spincic, Johann, to Leitz, Ernst, GmbH. TiO_2-P_2O_5-Na_2O-WO_3 optical glasses and method. 3,836,375, Cl. 106-47.00q.

Brookins, Richard H.; and Miller, John Paul, to Brown International Corporation. Filter screen mounting. 3,836,464, Cl. 210-413.000.

Brooks, Daryl G., to Porta-Tool, Incorporated. Centering tool. 3,836,277, Cl. 408-75.000.

Brooks, Frank E.: *See—*
Anderson, Gordon C.; and Brooks, Frank E., 3,835,634.

Brooks, James, Jr., to McDonald, Jack. Conveyor with extendible booms. 3,835,980, Cl. 198-139.000.

Brooks, Juanita L., to Sears, Roebuck and Co., mesne. Panty girdle with stretchable leg support. 3,835,866, Cl. 128-547.000.

Brophy, James J.: *See—*
Miller, Harold C.; Cranford, Wilbert W., Jr.; and Brophy, James J., 3,835,784.

Brown Boveri & Company Ltd.: *See—*
Rauhut, Paul, 3,836,837.

Brown Company: *See—*
Buttery, Kenneth T., 3,835,988.

Brown, Derek James: *See—*
Arthur, George; and Brown, Derek James, 3,835,734.

Brown, Dwight C. Press-on pallet support. 3,835,791, Cl. 108-51.000.

Brown International Corporation: *See—*
Brookins, Richard H.; and Miller, John Paul, 3,836,464.

Brown, James B.; and Bailey, James D. Culture transporter. 3,835,834, Cl. 128-2.00w.

Brown, Larry E., to Systron Donna Corporation. Impedance plethysmograph and flow rate computer adjunct and method for use therewith. 3,835,839, Cl. 127-2.05f.

Brown, Robert H.: *See—*
Staley, James T.; Hunsicker, Harold Y.; and Brown, Robert H., 3,836,405.

Brown, Roger S.: *See—*
Mayer, Mayer, Jr.; Kotter, James I.; Salaun, Harold L., Jr.; and Brown, Roger S., 3,835,638.

Brown, Victor. Tower extractor for municipal wastes. 3,836,085, Cl. 241-19.000.

Bruce, William F., to American Home Products Corporation. 2,6-Dichlorobenzylidenehydrazides. 3,836,580, Cl. 260-558.00h.

Brucken, Byron L.: *See—*
Bernard, James A.; and Brucken, Byron L., 3,835,719.

Bruniche-Olsen, Henning Anton, to Aktieselskabet de Danske Sukkerfabrikker. Lixiviating apparatus. 3,836,337, Cl. 23-270.00r.

Bruno, Robert Peter; and Naugler, Albert Winston, to Honeywell Inc. Cooling apparatus for infrared detectors. 3,836,779, Cl. 250-352.000.

Brunswick Corporation: *See—*
Alexander, Charles F., Jr., 3,835,947.
Mickle, John L.; and Horn, Norman E., 3,835,822.

Buchel, Karl-Heinz: *See—*
Regel, Erik K.; Buchel, Karl-Heinz; and Plempel, Manfred, 3,836,663.
Regel, Erik K.; Buchel, Karl-Heinz; and Plempel, Manfred, 3,836,664.

Bucks, Robert M.: *See—*
Eckert, John P., Jr.; and Bucks, Robert M., 3,836,792.

Bucyrus-Erie Company: *See—*
Grider, Lyle D.; and Cleereman, Robert J., 3,836,012.

Budd Company, The: *See—*
Paul, John M.; Heisler, William C.; and Else, George W., 3,835,788.

Budich, Wolfgang: *See—*
Heuschen, Alexander; Schaefer, Hans; Budich, Wolfgang; Krah, Robert; and Obermeier, Karl, 3,836,274.

Buell, Bennett George, to American Cyanamid Company. 9-Carboxylic naphthoxazoles and plastics brightened therewith. 3,836,505, Cl. 260-45.80n.

Buell, Eugene F.: *See—*
Irrni, Meherwan C., 3,836,356.

Buettner, Larry H. Two-door lock device. 3,836,187, Cl. 292-262.000.

Buhl, Walter T., to Midland-Ross Corporation. Leveling system for vehicles with optical manual or automatic control. 3,836,161, Cl. 280-611.000.

Bundschuh, John J.; and Roman, Robert J., to Eastman Kodak Company. Cinematographic projectors of the like and cartridges for use therewith. 3,836,239, Cl. 352-73.000.

Bunyard, Alan Donald. Air cylinder. 3,835,753, Cl. 92-85.000.

Burckhardt, Christoph Benedikt; and Grandchamp, Pierre Andre, to Hoffmann, Heinz and Hoffmann-La Roche Inc. Echo sounding technique. 3,836,948, Cl. 340-1.00r.

Burge, Maurice Victor: *See—*
Jones, William Arthur; and Burge, Maurice Victor, 3,836,550.

Burke, Hubert K.; and Michon, Gerald J., to General Electric Company. Devices for sensing radiation. 3,836,773, Cl. 250-211.00j.

Burke, Jesse Haywood: *See—*
Pomerance, Joseph B.; and Burke, Jesse Haywood, 3,836,175.

Burnett, Mackenzie; Brady, Cyrus T.; Duffield, Peter L.; and Houser, Phillip H., to Mead Corporation, The. Recording head for a jet array recorder. 3,836,913, Cl. 346-75.000.

Burroughs Corporation: *See—*
Funk, John W.; Merlino, Eugene L., Jr.; and Woods, Daniel J., 3,835,771.

Burtha, John R.: *See—*
Sagi, Zsigmond L.; Comer, Robert C.; Andersen, Norman; Burtha, John R.; and Pertchik, Samuel, 3,835,990.

Bush, Clarence C., to United States of America, Army. Flow visualization using color reversible dyes. 3,835,703, Cl. 63-147.000.

Butter, Karl; and Knauer, Kuno, to Masserschmitt-Bolkow-Blohm GmbH. Regeneratively cooled rocket combustion chamber and thrust nozzle assembly. 3,835,644, Cl. 60-267.000.

Butterfield, Donald B.; and Marchetti, Albert A., to Ambac Industries, Inc. Fuel injection nozzle. 3,836,080, Cl. 239-96.000.

Butterworth, Arthur B.; deceased (by McCoy, Roland A.; executor), to Butterworth, Helen Libbey. Littoral flow trap or basin. 3,835,651, Cl. 61-4.000.

Butterworth, Helen Libbey: *See—*
Butterworth, Arthur B., 3,835,651.

Buttery, Kenneth T., to Brown Company. Window carton. 3,835,988, Cl. 206-45.310.

Buzzolini, Mario G., to Sandoz-Wander, Inc. Substituted purines as hypolipidemics. 3,836,656, Cl. 424-253.000.

Byble, Duane C.: *See—*
Leidy, Harold T.; Kerrigan, Charles M.; and Byble, Duane C., 3,836,678.

Byers, Gerald S.: *See—*
Hotchkiss, Kenneth W.; and Byers, Gerald S., 3,836,826.

Bystron, Bruno, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Fabric web hold-down apparatus for tailoring machines. 3,835,747, Cl. 83-422.000.

C & M Manufacturing Company, Inc.: *See—*
Weisker, Alexander; and Smith, Raymond L., Jr., 3,836,031.

Cabot Corporation: *See—*
Berstein, Gregor, 3,836,495.

California Institute of Technology: *See—*
Lovelock, James E., 3,836,449.

Calundann, Gordon W.; and Ferment, George R., to Celanese Corporation. Solutions of polybenzimidazoles yielding shaped polybenzimidazole articles having improved color stability. 3,836,500, Cl. 260-32.60n.

Calvert, Rodney K.; and Fishback, Alton J., to Mead Corporation, The. Article handling machine. 3,835,979, Cl. 198-30.000.

Camerino, Ernest, to Camerino, Lucian Ernest. Animating device. 3,835,561, Cl. 40-106.320.

Camerino, Lucian Ernest: *See—*
Camerino, Ernest, 3,835,561.

Cameron Iron Works, Inc.: *See—*
Oliver, John P., 3,835,655.

Campagnie des Lampes: *See—*
Tchang, Liang-Ing; and Dolezon, Jean, 3,836,817.

Campanella, Samuel J.; and Suyderhoud, Henri G., to Communications Satellite Corporation. Adaptive echo canceller with multi-increment gain coefficient corrections. 3,836,734, Cl. 179-170.200.

Campbell, George E., Jr.; and Lerner, Julius, to Sun Oil Company of Pennsylvania. Valve actuating means. 3,835,736, Cl. 81-180.00r.

Campbell, George Thomas Richardson, to Algoship International Limited. Trimming pipe system for free-flowing cargoes. 3,835,803, Cl. 114-73.000.

Campenon Bernard Europe: *See—*
Lehanneur, Claude J., 3,835,654.

Canada Data Canada, Ltd., mesne: *See—*
Murphy, John R. B.; and Plett, Edelbert G., 3,835,701.

Canadian Industries Limited: *See—*
Jones, Elwyn David, 3,835,755.

Canadian Patents and Development Limited: *See—*
Grunwald, Raymond, 3,836,061.

Canadian Porcelain Company Limited: *See—*
Rosenblatt, Gordon, 3,836,705.

Canepa, Angelo: *See—*
Rosa, Giovanni; and Canepa, Angelo, 3,835,707.

Canon Kabushiki Kaisha: *See—*
Hasegawa, Goro; Nakamoto, Soichi; Takishima, Yoshiyuki; Mashimo, Yukio; Taguchi, Tatsuya; Nakamura, Zenzo; and Taguchi, Tetsuya, 3,836,922.
Matsumoto, Kazuya, 3,836,257.
Matsumoto, Seiichi; Hosoe, Kuzuya; and Mochizuki, Noritaka, 3,836,919.
Uchiyama, Takashi; Taguchi, Tetsuya; and Mashimo, Yukio, 3,836,920.

Canron, Inc.: *See—*
Jaquet, Andre Gustave, 3,835,546.

Carborundum Company, The: *See—*
Wallis, Craig; and Melnick, Joseph L., 3,836,458.

Cardwell Westinghouse Company: *See—*
Kanjo, Wajih, 3,836,180.

Cariddi, John Charles: *See—*
Rogers, Howard David; Cariddi, John Charles; and Schaeflern, Henry, 3,835,670.

Carl Manufacturing Company: *See—*
Mori, Chuzo, 3,835,560.

Carlson, Richard A.; and Eddy, Robert E., to General Motors Corporation. Internal combustion engine cranking motor circuit. 3,836,788, Cl. 290-50.000.

Carlson, Ronald H., to Hooker Chemical Corporation. Synergistic metal sequestrant. 3,836,556, Cl. 260-439.00r.

Carr, Harry A. Maneuvering accessory for U-joint of socket wrenches. 3,835,735, Cl. 81-177.0uj.
Carr, Harry A. Keeper for socket wrenches. 3,835,737, Cl. 81-180.00r.
Carrier Corporation: *See—*
Amberger, Ronald F.; and Mizikar, David M., 3,835,696.
Carter, Thomas, 3,836,290.
Czuszak, Charles C., 3,836,281.
Pilarczyk, Karol, 3,835,918.
Carrieri, Louis F.: *See—*
Spanke, Edwin A.; Carrieri, Louis F.; and Francey, Melvin H., 3,835,971.
Carter, John: *See—*
Barrett, Arthur Michael; Carter, John; Hull, Roy; Le Count, David James; and Squire, Christopher John, 3,836,671.
Carter, Russell P., Jr., to Goodyear Tire & Rubber Company, The. High impact rigid self-skinned polyurethane foam and method. 3,836,487, Cl. 260-2.5ak.
Carter, Thomas, to Carrier Corporation. Motor compressor unit. 3,836,290, Cl. 417-415.000.
Carter-Waters Corporation: *See—*
Davies, David W., Jr., 3,835,613.
Caruso, Richard. Hair dryer. 3,836,750, Cl. 219-370.000.
Case, Cecil L.; Elder, Robert L.; and Fell, Ferol S., to Hesston Corporation. Header frame. 3,835,628, Cl. 56-144.000.
Cashin Systems Corporation: *See—*
Spooner, Robert J., 3,835,742.
Cassel, Erland, to Allgon Antenn AB. Logarithmic, periodical antenna array. 3,836,975, Cl. 343-792.500.
Cassette Sciences Corp.: *See—*
Keegan, Patrick J.; and Roberts, Carl J., 3,836,706.
Cataldo, John B.: *See—*
Di Marco, Bernard; Kussy, Frank W.; and Cataldo, John B., 3,836,820.
Caterpillar Tractor Company: *See—*
Bertram, August H.; and Miller, Calvin L., 3,835,722.
Geier, Timothy D., 3,836,032.
Catherwood, Herbert C. Method of operating a rotary piston internal combustion engine. 3,835,818, Cl. 123-8.330.
Cattermole, Roger Edward: *See—*
Hill, William Frank; and Cattermole, Roger Edward, 3,835,821.
Cavalier Corporation: *See—*
Bowman, Raymond D., 3,836,046.
Cechetini, James A. Reflective pavement marker. 3,836,226, Cl. 350-103.000.
Celanese Corporation: *See—*
Calundann, Gordon W.; and Ferment, George R., 3,836,500.
Jamison, Sauders E.; and Anthony, Gene H., 3,836,615.
Prince, Arthur E., Jr., 3,836,621.
Celestini, Nadios, to GTE International Incorporated. Scanner for automatic telephone exchanges. 3,836,725, Cl. 179-18.0fg.
Certain-Teed Products Corporation, mesne: *See—*
Hoffmann, George A., Jr., 3,835,604.
Cetenko, Wiaczeslaw A.: *See—*
Morrison, Glenn C.; and Cetenko, Wiaczeslaw A., 3,836,536.
Chalecki, Janusz: *See—*
Wysocki, Stanislaw; and Chalecki, Janusz, 3,835,476.
Chambers, Derek, to Raytheon Company. Power supply for use with a display system. 3,836,813, Cl. 315-18.000.
Chambers, John Frederick. Framework connector. 3,836,270, Cl. 403-218.000.
Chandler Evans Inc.: *See—*
Duckworth, Allen, 3,836,295.
Chang, Joseph K. Treatment of canine distemper with a microbial product derived from the bacterium achromobacter stenohalis. 3,836,648, Cl. 424-195.000.
Charles Inc.: *See—*
Schneider, Charles; and Goodman, George A., 3,835,697.
Chatillon, Viry: *See—*
Darpentigny, Charles; Lesserteur, Michel; Chatillon, Viry; and Lux, Daniel, 3,836,047.
Chatinian, Jury Smbatovich: *See—*
Akopian, Vladimir Amayakovich; and Chatinian, Jury Smbatovich, 3,836,830.
Chelton, Raymond G.: *See—*
Hekal, Ihab M.; and Chelton, Raymond G., 3,836,494.
Chemetron Corporation: *See—*
Griscom, Richard W.; and Brader, James J., Jr., 3,836,674.
Scudder, John A., 3,835,657.
Chemische Werke Huels, A.G.: *See—*
Turck, Ulrich, 3,836,497.
Chemische Werke Huls Aktiengesellschaft: *See—*
Finkman, Hans-Ulrich; and Engeln, Bernard, 3,836,607.
Streck, Roland; and Weber, Heinrich, 3,836,593.
Chesmejef, Stephen, to General Electric Company. Steam air preheater for a steam boiler system. 3,835,650, Cl. 60-690.000.
Chevron Research Company: *See—*
Danzik, Mitchell; and House, Ralph, 3,836,484.
Kensler, Daniel L., Jr.; and Walgenbach, David D., 3,836,655.
Chicago Metal Mfg. Co.: *See—*
Wendt, William H., III, 3,835,744.
Chicago Musical Instrument Co.: *See—*
Olson, Robert Dale, 3,835,748.
Chielens, Alain: *See—*
Retali, Roger; Chielens, Alain; and Boussekey, Bernard, 3,836,103.
Child, Francis W., to University of Minnesota, The Regents of the. Pivoting disc-type heart valve with two-piece base. 3,835,475, Cl. 3-1.000.
Chiyoda Chemical Engineering & Construction Co., Ltd.: *See—*
Noguchi, Masaaki; Yanagioka, Hiroshi; Kanai, Toshio; Nishiguchi, Kazuo; Hashimoto, Hideo; Abe, Katuhiro; Masuko, Tomio; Mahimo, Zenichi; and Kogawa, Yosio, 3,836,630.
Choate, Wallace R.: *See—*
Taylor, Victor E.; Choate, Wallace R.; Banachowski, Stanley; Johnson, Robert W.; and Faison, Robert C., 3,835,743.
Chocoladefabriken Lindt & Sprungli Aktiengesellschaft: *See—*
Raths, Rudolf, 3,835,922.
Chopieska, Frank S.: *See—*
09/17/74; and Chopieska, Frank S., 3,836,052.
Christofer, Donald E.: *See—*
Stock, Arthur J.; Christofer, Donald E.; and Brinza, Joseph E., 3,835,617.
Chu, Nan S., to Union Carbide Corporation. Copolymerization of olefinically unsaturated monomers. 3,836,512, Cl. 260-80.730.
Chuo Denshi Kogyo Co., Ltd.: *See—*
Yamazaki, Haruji, 3,836,724.
Ciba-Geigy AG: *See—*
Barber, Albert John; Massey, Derek James Rowland; McCartney, James; and Winterbottom, Kenneth, 3,836,390.
Garner, Robert; and Bolliger, Hans Rudolf, 3,836,382.
Grelat, Maurice; and Archambault, Jean, 3,836,548.
Hennart, Claude, 3,836,643.
Somlo, Tibor; and Stagi, Mauro, 3,836,522.
Ciba-Geigy Corporation: *See—*
Keller, Walter; and Zaehner, Hans, 3,836,642.
Steinetz, Bernard George, Jr., 3,836,659.
Wilhelmi, Gerhard, 3,836,644.
Cidzik, Daniel F., to Reynolds Metals Company. Easy-open wall. 3,836,038, Cl. 220-48.000.
Cimprich, Francis J., to Goodrich, B. F., Company, The. Method and apparatus for correcting dimensional variation in a rotating tire. 3,835,591, Cl. 51-106.00r.
Cincinnati Industries, Inc.: *See—*
Graham, Richard H., 3,836,345.
Circle Milking, Inc.: *See—*
Jacobs, Leonard D.; and Bennett, Robert H., 3,835,814.
Cisz, Michael: *See—*
Zysk, Edward D.; Robertson, Allen R.; Cisz, Michael; and Sheridan, Robert W., 3,836,402.
City of Hope: *See—*
Mount, Bruce E., 3,835,840.
Clark, Gary T., to Eastman Kodak Company. Cationic azo dyes from aminohalobenzenesulfonamides. 3,836,518, Cl. 260-152.000.
Clark, J. Wickham: *See—*
Grivna, Gerald J., 3,835,493.
Clark, James M., to International Telephone and Telegraph Corporation. Tasi assignment control arrangement. 3,836,719, Cl. 179-15.0as.
Clarke, Graham Morley, to Ferranti Limited. Device for detection of blemishes on opposite faces of a planar object. 3,836,261, Cl. 356-200.000.
Clarke, James A.; Jacobus, John J.; and Lager, Eric Peter, to General Signal Corporation. Centralized traffic control system for railroads. 3,836,768, Cl. 246-3.000.
Clasen, Hermann: *See—*
Alt, Hartmuth; Clasen, Hermann; and Cramer, Jurgen, 3,836,440.
Claude, Beaudouin Jean, to Flaminaire. Gas lighters. 3,835,579, Cl. 431-344.000.
Clausing, Challiss I., to I-T-E Imperial Corporation. Current limiting circuit interrupter device. 3,836,819, Cl. 317-11.00c.
Clear Hooters Limited: *See—*
Lloyd, Jeffrey Neil, 3,835,759.
Clear View Manufacturing Company: *See—*
Weast, Gerald T., 3,835,565.
Cleereman, Robert J.: *See—*
Grider, Lyle D.; and Cleereman, Robert J., 3,836,012.
Clement, Clarence C., Jr., to Halliburton Company. Methods for sealing subterranean earth formations. 3,835,926, Cl. 166-292.000.
Clement, Ralph C., to I-T-E Imperial Corporation. Electrified duct and fittings therefor. 3,836,936, Cl. 339-21.00r.
Clements, Alwin S.: *See—*
Metcalfe, Kenneth A.; Clements, Alwin S.; and Wilson, Clive W., 3,836,361.
Metcalfe, Kenneth A.; Clements, Alwin S.; and Wilson, Clive W., 3,836,381.
Clough, George A.: *See—*
Koehler, Helmut A.; Redhead, David L.; and Clough, George A., 3,836,865.
Cloup, Jean. Apparatus for machining work-pieces. 3,836,276, Cl. 408-67.000.
Cobb, Richard O.; and Lipp, James, to International Business Machines Corporation. Edge locating apparatus. 3,835,998, Cl. 209-111.700.
Cockerell, David, to Electronic Music Studies (London) Limited. Data input devices. 3,836,909, Cl. 340-365.00c.

Codet, Georgis; Dawans, Francois; De Charentenay, Francois-Xavier; and Teyssie, Philippe, to Institut Francais du Petrole des Carburants et Lubrifiants. Process for polymerizing conjugated diolefins using organic compounds of the transition metals as catalsts. 3,836,444, Cl. 204-159.240.

Codrino, Giuseppe. Device for the electrical connection between cables and ribbon-like. 3,836,940, Cl. 339-91.00r.

Cogsdill Tool Products, Inc.: *See—*
Walters, William D., 3,835,517.

Coldewey, Heiko: *See—*
Horst, Wilfried; Coldewey, Heiko; Ammazzalorso, Mario; and Schuppler, Emil, 3,835,911.

Cole, Edward L.; Hess, Howard V.; and Franz, William F., to Texaco Inc. Coking of waste alkaline sulfite pulp liquor at lowered pH. 3,836,427, Cl. 162-31.000.

Cole, Frank J.: *See—*
Roblin, John M.; Cole, Frank J.; and Reed, William A., 3,836,387.

Cole, Herbert S., Jr., to General Electric Company. Uniform liquid crystal cells and method for making the same. 3,836,231, Cl. 350-160.0lc.

Colgate-Palmolive Company: *See—*
Dickson, Robert E., 3,836,496.
Drukker, Alexander E.; and Judd, Claude I., 3,836,534.

Collard, Daniel: *See—*
Bouy, Pierre; and Collard, Daniel, 3,836,448.

Collier, Henry Oswald Jackson; and Warren, Brian Thomas, to Miles Laboratories, Inc. Method of producing bronchodilation. 3,836,667, Cl. 424-318.000.

Collins Radio Company: *See—*
Johnson, Frederick W., 3,836,935.
Steen, Carl E., 3,836,797.

Collins, Robert J. Animal feed and process. 3,836,660, Cl. 424-269.000.

Collins, Robert J. Animal feed and process. 3,836,661, Cl. 424-269.000.

Collins, Robert J. Animal feed and process. 3,836,662, Cl. 424-269.000.

Colomb, Henry Octave, Jr.; and Trecker, David John, to Union Carbide Corporation. Radiation convertible norbornene polymers. 3,836,509, Cl. 260-77.5bb.

Colonial Mirror and Glass Corporation: *See—*
Steiner, Henry William, 3,835,576.

Colorcraft Corporation: *See—*
Spruyt, Harry; and Hoffman, Louis S., 3,835,905.

Colvin, Alex D., to Ford Motor Company. Internal combustion engine coolant system leak detection method. 3,836,253, Cl. 356-70.000.

Combustion Engineering, Inc.: *See—*
Ferrin, Charles R., 3,835,816.
Harkness, Richard Ernest, 3,835,955.

Comer, Robert C.: *See—*
Sagi, Zsigmond L.; Comer, Robert C.; Andersen, Norman; Burtha, John R.; and Pertchik, Samuel, 3,835,990.

Commercial Solvents Corporation: *See—*
Griffith, George L.; and Edwards, Donald W., 3,835,782.
Hodge, Edward B., 3,836,654.
Urry, Wilbert Herbert; and Mullenbach, Guy Towns, 3,836,544.

Commonwealth of Australia, care of the Secretary: *See—*
Metcalfe, Kenneth A.; Clements, Alwin S.; and Wilson, Clive W., 3,836,361.

Commonwealth of Australia, care of the Secretary, Department of Supply: *See—*
Metcalfe, Kenneth A.; Clements, Alwin S.; and Wilson, Clive W., 3,836,381.

Communications Satellite Corporation: *See—*
Campanella, Samuel J.; and Suyderhoud, Henri G., 3,836,734.

Compoflex Company Limited: *See—*
White, Joseph, 3,835,891.

Compton, Ell Dee: *See—*
Cooke, Anson R.; Jacobs, Richard L.; and Compton, Ell Dee, 3,836,351.

Condon, Edward U., to Corning Glass Works. Fiber optic plate with dense opal glass cladding. 3,836,809, Cl. 313-465.000.

Connor, James E., Jr.; Rieve, Robert W.; and Shalit, Harold, to Atlantic Richfield Company. Process for preparing para-xylene. 3,836,603, Cl. 260-673.500.

Conrad, Sherman E.; and Bintner, Dennis W., to Delavan Manufacturing Company. Foam generating nozzle. 3,836,076, Cl. 239-8.000.

Container Corporation of America: *See—*
Miller, Ronald H.; and Radli, Bruce A., 3,836,104.

Continental Can Company, Inc.: *See—*
Hekal, Ihab M.; and Chelton, Raymond G., 3,836,494.
Lecinski, Frank H., Jr., 3,836,034.

Continental Oil Company: *See—*
Gordon, Ronnie D., 3,836,592.
Kellum, Jerome B.; and Smith, Bill, 3,835,738.

Conway, William H.; and Aukland, Jerry C., to United States of America, Air Force. Four-horn radiometric tracking RF system. 3,836,972, Cl. 343-100.0me.

Conwicke, Joel Alfred, to Du Pont du Nemours, E. I., and Company. Vanadium based resistor compositions. 3,836,340, Cl. 29-182.500.

Cook, Edward H., Jr.: *See—*
Schultz, Robert F.; and Cook, Edward H., Jr., 3,836,450.

Cook, Jack E.: *See—*
Holmen, Reynold E.; and Cook, Jack E., 3,836,227.

Cooke, Anson R.; Jacobs, Richard L.; and Compton, Ell Dee, to Amchem Products, Inc., mesne. Method of controlling plant growth with 3-substituted- pyrido (3,2-d) pyrimidine-2,4-(1H,3H)-dienes. 3,836,351, Cl. 71-92.000.

Cooley, Richard F., to Owens-Illinois, Inc. Laser glass host compositions comprising TeO_2, B_2O_3 and ZnO. 3,836,868, Cl. 331-94.500.

Cooley, Richard F., to Owens-Illinois, Inc. Laser glass host compositions comprising TeO2, BaO and ZnO and methods of making and using the same. 3,836,869, Cl. 331-94.500.

Cooley, Richard F., to Owens-Illinois, Inc. Laser glass host compositions comprising TeO2 and BaO. 3,836,870, Cl. 331-94.500.

Cooley, Richard F., to Owens-Illinois, Inc. Laser glass host compositions comprising TeO_2, Li_2O and ZnO. 3,836,871, Cl. 331-94.500.

Coran, Aubert Yaucher: *See—*
Boustany, Kamel; and Coran, Aubert Yaucher, 3,836,412.

Cornair, Russell J. Multi-purpose support apparatus. 3,835,527, Cl. 29-560.000.

Corning Glass Works: *See—*
Condon, Edward U., 3,836,809.
Eppes, William R., 3,836,335.
Kaukeinen, Ralph M., 3,836,302.

Coski, William D., to Ingersoll-Rand Company. Shielding means. 3,835,933, Cl. 172-518.000.

Coski, William D., to Ingersoll-Rand Company. Shaft mounting means. 3,836,271, Cl. 403-355.000.

Costello, Bernard J., to Argus Engineering Company. Soldering method. 3,836,745, Cl. 219-85.000.

Cotton, Incorporated: *See—*
Lord, John G., 3,835,552.

Coules, Ronald A., to Richco Plastic Company. Circuit board spacer-support. 3,836,703, Cl. 174-138.00d.

Coules, Ronald A., to Richco Plastic Company. Insulator grommet or spacer. 3,836,704, Cl. 174-138.00d.

Coulter Electronics, Inc.: *See—*
Coulter, Wallace H.; Ingram, Marylou; and Ferro, Patrick Vincent, 3,836,849.
Coulter, Wallace H., 3,836,850.

Coulter, Wallace H.; Ingram, Marylou; and Ferro, Patrick Vincent, to Coulter Electronics, Inc. Method for classifying particles. 3,836,849, Cl. 324-71.0cp.

Coulter, Wallace H., to Coulter Electronics, Inc. Apparatus for particle size distribution display with means to selectively alter the display by adding predetermined D.C. signals to the data. 3,836,850, Cl. 324-71.0cp.

Courten, Henry C.; and Mattal, Joseph P., to Grumman Aerospace Corporation. Angular orientation measuring apparatus. 3,836,258, Cl. 356-138.000.

Cowan, Larry Clyde, to Leesona Corporation. Fluid operated system. 3,835,751, Cl. 91-420.000.

Cowett, Philip M., Jr., to United States of America, Army. Method for nuclear radiation hardening of DC-to-DC converters. 3,836,836, Cl. 321-44.000.

Cox, Gerald C.: *See—*
Seitz, Paul N.; Cox, Gerald C.; and Kahle, Rolf D., 3,836,926.

Cracraft, Larry F.; Oppmann, Richard C.; and Whitaker, Edward G., to General Motors Corporation. Apparatus for measuring the speed of a moving member. 3,836,853, Cl. 324-166.000.

Cracraft, Larry F.; Houser, David E.; and Whitaker, Edward G., to General Motors Corporation. Motor vehicle seat belt safety system. 3,836,955, Cl. 340-52.00e.

Cragg, William Donald, to International Standard Electric Corporation. Electro-acoustic armature transducer. 3,836,733, Cl. 179-119.00a.

Craig, John C., Jr., to American Parking Company, Inc. Fee collection device. 3,836,069, Cl. 232-1.00r.

Cramer, Jurgen: *See—*
Alt, Hartmuth; Clasen, Hermann; and Cramer, Jurgen, 3,836,440.

Cranford, Wilbert W., Jr.: *See—*
Miller, Harold C.; Cranford, Wilbert W., Jr.; and Brophy, James J., 3,835,784.

Cravens, Paul E.: *See—*
Shoberg, Ralph A.; and Cravens, Paul E., 3,836,459.

Crawford, Brian Thomas: *See—*
Henderson, David Alexander Whyte; and Crawford, Brian Thomas, 3,836,240.

Creadon, William F.: *See—*
Norton, James F.; and Creadon, William F., 3,836,114.

Cricchi, James R., to Westinghouse Electric Corporation. MNOS/SOS random access memory. 3,836,894, Cl. 340-173.00r.

Crocker, James Dennis: *See—*
Earhart, Jack R.; Crocker, James Dennis; and Johnson, John K., 3,836,130.

Croix-Marie, Francis Marie; and Dubois, Daniel Jean-Marie, to Bertin & Cie. Attitude compensation method and system for ground-effect machines. 3,835,952, Cl. 180-118.000.

Crosby, Philip S.: *See—*
Durecka, John; and Crosby, Philip S., 3,836,811.

Cross, Charles, to Robertshaw Controls Company. Output encoder and line driver. 3,836,904, Cl. 340-347.0dd.

Cross, Charles, to Robertshaw Controls Company. Analog to digital converter. 3,836,905, Cl. 340-347.0ad.

Cross, Charles, to Robertshaw Controls Company. Method and apparatus for decoding biphase signals. 3,836,956, Cl. 340-146.1ab.

Crotti, Renato. Apparatus for the reforming of yarn package carriers made of plastic material. 3,836,310, Cl. 425-384.000.

Crowley, Charles L.: *See—*
Grosholz, James R.; Crowley, Charles L.; and Hutter, Charles G., 3,836,287.

Crum, Donald: *See—*
Goff, McKinley; and Crum, Donald, 3,836,197.

Crump, Robert O.; and Bethsold, Karl R., to Honeywell Information Systems, Inc. Gravity-fed selectable pin insertion device. 3,835,521, Cl. 29-203.00b.

Csongor, Desider G. Apparatus for extruding melted plastic mixtures. 3,836,127, Cl. 259-191.000.

Cubitt, Robert B.: *See—*
Tilp, Robert F.; Fitzpatrick, William E.; and Cubitt, Robert B., 3,836,044.

Curran, John: *See—*
Benoit, Roland A.; and Curran, John, 3,835,486.

Curran, Roger J., to Remington Arms Company, Inc. Shot container wad for hard shot. 3,835,783, Cl. 102-42.00c.

Cuthbertson, Kenneth J., to Honeywell Inc. Curie point ambient temperature sensor. 3,836,827, Cl. 317-133.000.

Cutler-Hammer, Inc.: *See—*
White, Warren D., 3,836,929.

Cyclo Index Corporation: *See—*
Zugel, Martin J., 3,835,723.

Czuszak, Charles C., to Carrier Corporation. Nozzle structure for steam turbines. 3,836,281, Cl. 415-217.000.

Dadekian, Zaven A., to Baird Chemical Industries, Inc. Method of killing bacteria using didecyl dimethyl ammonium chloride. 3,836,669, Cl. 424-329.000.

Daggett, Ronald L.: *See—*
Barker, Bernard A.; and Daggett, Ronald L., 3,835,882.

Dai Nippon Printing Company Limited: *See—*
Mori, Takahisa; and Matsubara, Izuru, 3,835,989.

Daihatsu Kogyo Kabushiki Kaisha: *See—*
Furusho, Hirosuke; and Fukui, Shigetaka, 3,835,725.

Daimler-Benz A.G.: *See—*
Bender, Klaus, 3,835,499.

Daimler-Benz Aktiengesellschaft: *See—*
Gotz, Hans, 3,836,191.
Hundt, Eberhard, 3,835,951.
Lamm, Heinz, 3,836,293.
Schiesterl, Gerhard, 3,836,169.
Von Koch, Arwed, 3,836,832.
Wilfert, Karl, 3,836,192.

Dainippon Ink & Chemicals, Inc.: *See—*
Yoshizawa, Masao; Mikami, Takeo; Kobayashi, Nobuo; and Iida, Akira, 3,836,507.

Dainippon Pharmaceutical Co., Ltd.: *See—*
Minami, Shinsaku; Matsumoto, Jun-Ichi; Shimizu, Masanao; and Takase, Yoshiyuki, 3,836,528.

Dal, Henry A.; and Keur, Robert I., to Dick, A. B., Company. Method for controlling ink characteristics. 3,835,881, Cl. 137-389.000.

D'Amata, Michael. Control for ball piston fluid transmission device. 3,835,752, Cl. 91-492.000.

Damon Corporation: *See—*
Jordan, Michael, 3,836,329.

Dance, Harry Jr. Insert for a golf club head. 3,836,153, Cl. 273-173.000.

Daniel, Heston C. Dental cleaning device. 3,835,872, Cl. 132-92.00r.

Danilovich, Mikhail: *See—*
Dudko, Daniil Andreevich; and Danilovich, Mikhail, 3,836,292.

Danneberg, Peter: *See—*
Weber, Karl Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,836,652.
Weber, Karl Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, deceased, 3,836,653.

Danzik, Mitchell; and House, Ralph, to Chevron Research Company. Phosphate-free detergent concentrated containing sulfated and sulfonated linear alkylphenols. 3,836,484, Cl. 252-550.000.

Darpentigny, Charles; Lesserteur, Michel; Chatillon, Viry; and Lux, Daniel, to Anvar Agence Nationale de Valorisation de la Recherche. Antiobiotic disc distributors. 3,836,047, Cl. 221-93.000.

Dastoli, Joseph, Sr. Tension adjustment tool. 3,835,488, Cl. 7-1.00r.

David, Pierre Yvon; and Martin, Gilbert Marius, to Republic of France; as represented by State Minister charged with National Defence Delegation Ministerielle pour l'Armement, Bureau des Prevets et Inventions. Device for rotating passage through a wall subect to different pressures on either side. 3,835,801, Cl. 114-16.00r.

Davies, David W., Jr., to Carter-Waters Corporation. Sign frame assembly. 3,835,613, Cl. 52-656.000.

Davis, Jack Raymond. Work clamp. 3,836,136, Cl. 269-150.000.

Davis, John A., Jr.: *See—*
Rhudy, John S.; and Davis, John A., Jr., 3,836,465.

Davis, Paul; Schneider, David; and Hollinger, Paul, to Sweetheart Plastics, Inc. Cone package. 3,835,994, Cl. 206-499.000.

Davis, Steven S., to Envirotech Corporation. Media feed system for a filtration device. 3,836,006, Cl. 210-387.000.

Davison, Clifford C.; and Ott, Reinhold A., to Gulf Oil Corporation. Packing ring. 3,836,158, Cl. 277-146.000.

Dawans, Francois: *See—*
Codet, Georgis; Dawans, Francois; De Charentenay, Francois-Xavier; and Teyssie, Philippe, 3,836,444.

Dawson, George J.; Hannum, Kenneth O.; and Himmelman, Gerald L., to Alvey, Inc. Discrete article palletizing and depalletizing apparatus. 3,836,018, Cl. 214-6.0fs.

Dayco Corporation: *See—*
Fisher, David G.; and Hill, Jerry W., 3,835,720.

Dayton-Walther Corporation: *See—*
Troester, Thomas F.; and Rike, Russell E., 3,835,961.

De Boer, Thijs Johannes: *See—*
Johanns, Johannes Hendricus Maria; De Boer, Thijs Johannes; De Haan, Edward Fokko; Van Gelder, Zeger; and Mattheij, Mathieu Martinus Maria Petrus, 3,836,810.

De Charentenay, Francois-Xavier: *See—*
Codet, Georgis; Dawans, Francois; De Charentenay, Francois-Xavier; and Teyssie, Philippe, 3,836,444.

De Garcia, Horacio J., Jr.; and Zimmerman, Vincent H., to McDonnell Douglas Corporation. Nested toroid nozzle apparatus. 3,835,643, Cl. 60-230.000.

De Haan, Edward Fokko: *See—*
Johanns, Johannes Hendricus Maria; De Boer, Thijs Johannes; De Haan, Edward Fokko; Van Gelder, Zeger; and Mattheij, Mathieu Martinus Maria Petrus, 3,836,810.

De Jong, Maarten C.; and Gutowski, Antoni P., to Stanley Works, The. Level vial station assembly. 3,835,549, Cl. 33-379.000.

De Jonge, Frederik Ate, to U.S. Philips Corporation. Opto-magnetic memory. 3,836,895, Cl. 340-174.0yc.

De Koning, Joseph G.: *See—*
Overall, Wilson W.; and De Koning, Joseph G., 3,836,846.

De Mathe, Leslie L. Drafting instrument. 3,835,542, Cl. 33-109.000.

de Montigny, Armand; Schnurrbusch, Karl; Seyfried, Klaus; and Noll, Walter, to Bayer Aktiengesellschaft. Process for the production of tris-(trimethylsiloxy)-phenylsilane. 3,836,558, Cl. 260-448.20e.

De Simone, Roy R.; Donofrio, Nicholas M.; Linton, Richard H.; Sonoda, George; and Wade, William T., to International Business Machines Corporation. D.C. stable electronic storage utilizing A.C. stable storage cell. 3,836,892, Cl. 340-173.0dr.

Dean, Warren E.; and Makris, William E., to PPG Industries, Inc. Process for recovering mercury from brine solids. 3,836,442, Cl. 204-99.000.

Decor Manufacturing Co., Inc.: *See—*
Volent, Stanley C., 3,836,619.

DeJong, Allan W., to Fram Corporation. Controlled deflection bladed fan. 3,836,284, Cl. 416-132.000.

Del Priore, Vincent; Rous, Arthur; and Holtzman, Richard, to Federal Carton Corporation. Book carton. 3,836,066, Cl. 229-40.000.

Delahunty, John J. Cyanoacrylate adhesive composition. 3,836,377, Cl. 106-287.000.

Delavan Manufacturing Company: *See—*
Conrad, Sherman E.; and Bintner, Dennis W., 3,836,076.

Dellasala, Frank. Method of introducing liquid doses. 3,835,874, Cl. 137-15.000.

Denigan, Edward P., Jr.; and Ballard, Donnell A., to Oxirane Corporation. Storage and transport system. 3,835,930, Cl. 169-66.000.

Denki Onkyo Company Limited: *See—*
Shimizu, Masao; Sakurai, Yasunoeu; Sato, Hideo; and Inoue, Keiji, 3,836,794.

Dennis, Kent S.: *See—*
Brewbaker, James L.; Nowak, Robert M.; and Dennis, Kent S., 3,836,600.

Derleth, Helmuth: *See—*
Paucksch, Heinrich; Massonne, Joachim; and Derleth, Helmuth, 3,836,479.

Derror, Fred L., to Mansfield Sanitary, Inc. Apparatus for a system to extricate intricate, ceramic shapes from multiple piece molds. 3,836,312, Cl. 425-441.000.

DesChamps, Nicholas Howard: *See—*
Faris, George N.; and DesChamps, Nicholas Howard, 3,835,921.

Desty, Denis Henry; and Young, Christopher John, to British Petroleum Company Limited, The. Flare-stack. 3,836,318, Cl. 431-202.000.

Deutsch, Fritz A.: *See—*
Grosswiller, Leo J. Jr.; Deutsch, Fritz A.; and Leipelt, Paul A., 3,836,980.

Deutsche Gold-und Silber-Scheideanstalt vormals Roessler: *See—*
Beschke, Helmut, 3,836,633.

Development Associates: *See—*
Ennis, Joseph C.; and Winn, Ray, 3,836,961.

Dewing, Ernest William, to Alcan Research and Development Limited. Direct reduction process for production of aluminium. 3,836,357, Cl. 75-68.00a.

Dexter, Everett H.: *See—*
Howe, Milton A., Jr.; Dexter, Everett H.; and Thompson, Eugene D., 3,835,993.

Di Gioia, Leo J.: *See—*
Roberts, Robert R.; and Di Gioia, Leo J., 3,835,859.

Di Marco, Bernard; Kussy, Frank W.; and Cataldo, John B., to I-T-E Imperial Corporation. Manual motor starter combined with fused circuit protectors. 3,836,820, Cl. 317-13.00b.

Diamond, Allen M., to Beckman Instruments, Inc. Low dissipation power amplifier. 3,836,861, Cl. 330-15.000.

Dick, A. B., Company: *See—*
Dal, Henry A.; and Keur, Robert I., 3,835,881.

Dickson, Robert E., to Colgate-Palmolive Company. Composition for imparting non-permanent soil-release characteristics comprising an aqueous acidic solution of polycarboxylate polymer. 3,836,496, Cl. 260-29.60h.

Diebold, Incorporated: *See—*
Grosswiller, Leo J. Jr.; Deutsch, Fritz A.; and Leipelt, Paul A., 3,836,980.

Diehl, Christiane: *See—*

Bielfeldt, Heinz, 3,835,566.
Diehl, Firma: *See—*
Meisner, Alfred; and Spitzl, Walter, 3,836,213.
Dietlein, Robert W. Plastic sleeve encapsulated fastener locking insert and assembly. 3,835,906, Cl. 151-21.00b.
Dietz, Helmut: *See—*
Schreiner, Horst; Geldner, Ernst; and Dietz, Helmut, 3,836,807.
Dietz, Kurt; Lenert, August; Silbermann, Karl; Appelt, Gunther; and Elsas, Adolf; deceased (by Agnes, Eisas; heir), to Siemens Aktiengesellschaft. Rotary anode and an X-ray tube provided therewith. 3,836,803, Cl. 314-60.000.
Digital Equipment Corporation: *See—*
Kotok, Alan; Kent, Allan R.; and Gross, David A., 3,836,889.
Dillard, John W.: *See—*
Tringali, Dominick; and Dillard, John W., 3,836,915.
DiMaio, John: *See—*
Matthews, Richard, 3,835,815.
Dine, Lester A.; and Lemmey, Edgar S. Close-up flash camera attachment. 3,836,927, Cl. 354-80.000.
Diveley, William R., to Hercules Incorporated. Process for making an O,O-di (Cl-C8 alkyl) thiophosphoryl chloride. 3,836,610, Cl. 260-986.000.
Dodd, Joseph C. Device and method of recovering sticky particulate materials such as algae. 3,836,681, Cl. 426-272.000.
Dolezon, Jean: *See—*
Tchang, Liang-Ing; and Dolezon, Jean, 3,836,817.
Donahoe, John K., to McDonnell Douglas Corporation. Replaceable surface windshields. 3,836,193, Cl. 296-84.00r.
Donahue, Edward T.: *See—*
Kenney, Harold E.; Donahue, Edward T.; and Maerker, Gerhard, 3,836,468.
Donato, Anthony Carl. Power distribution system for convenience outlets. 3,836,937, Cl. 339-21.00r.
Donbar Development Corporation: *See—*
Faris, George N.; and DesChamps, Nicholas Howard, 3,835,921.
Donn Products, Inc.: *See—*
Downing, Lucien R., Jr., 3,835,614.
Donofrio, Nicholas M.: *See—*
De Simone, Roy R.; Donofrio, Nicholas M.; Linton, Richard H.; Sonoda, George; and Wade, William T., 3,836,892.
Dopkin, Joseph A.; and Hermann, Paul, to Ingersoll-Rand Company. Shaft vibration dampening means and method. 3,836,215, Cl. 308-184.000.
Dornier System GmbH: *See—*
Hepp, Wolfgang; Pimiskern, Klaus; and Herbert, Werner, 3,836,212.
Dougherty, Earle T. Water walking pontoons. 3,835,494, Cl. 9-310.00d.
Douglas, Clarence J.; Young, Walter L.; and Phillips, Jack H., to Ozark-Mahoning Company. Methods and apparatus for submerged combustion (with air pollution control). 3,835,909, Cl. 159-16.00a.
Douglas, Ellwood S.: *See—*
Wahlgren, Wallace W.; and Douglas, Ellwood S., 3,836,821.
Doversberger, Richard A., to Westinghouse Air Brake Company. Friction-type brake adjustment device. 3,835,965, Cl. 188-79.5gt.
Dow Chemical Company, The: *See—*
Brewbaker, James L.; Nowak, Robert M.; and Dennis, Kent S., 3,836,600.
Goralski, Christian T., 3,836,566.
Pruitt, Ronnie, M.; and Potter, James L., 3,836,488.
Schmidt, Donald L.; and Roberts, Charles B., 3,836,385.
Shih, Pong Su., 3,836,485.
Dow Corning Corporation: *See—*
Kokoszka, John G., 3,836,371.
Lange, Paul M., 3,836,647.
Matherly, James E., 3,836,623.
Schulz, Jay R., 3,836,502.
Schulz, Jay R., 3,836,503.
Dowell, Frederick Sidney: *See—*
Stimson, Ian Leonard; Dowell, Frederick Sidney; and Healy, Benedict Pascal, 3,836,201.
Downing, Kenneth G., to Thermon Manufacturing Company. Insulated electrical connection. 3,836,699, Cl. 174-87.000.
Downing, Lucien R., Jr., to Donn Products, Inc. Suspension system. 3,835,614, Cl. 52-666.000.
Doya, Masaharu: *See—*
Sano, Tutomu; and Doya, Masaharu, 3,836,445.
Dreher, Karl: *See—*
Steinberger, Siegfried; Pflugbell, Mathias; Nagel, Erich; Baasner, Wilhelm; Dreher, Karl; Englert, Werner; Ehrengruber, Paul; and Fleck, Adolf, 3,836,060.
Driebelbis, Richard C., to Emerson Electric Co. Remote plastic dispensing head with fluid level actuated expension chamber shut off. 3,836,050, Cl. 222-66.000.
Driscoll, Gary L., to Sun Research and Development Company. Polymerization of dialkyl vinylidene compounds to oils. 3,836,596, Cl. 260-683.15b.
Driscoll, Michael M.: *See—*
Healey, Daniel J., III; and Driscoll, Michael M., 3,836,873.
Drukker, Alexander E.; and Judd, Claude I., to Colgate-Palmolive Company. 5-Piperazino-6-hydroxy-5H-benzocycloheptenes. 3,836,534, Cl. 260-268.0bc.
Dryden Corporation: *See—*
Dryden, Gale E., 3,835,627.
Dryden, Gale E., to Dryden Corporation. Disposable apparatus for circle absorption system. 3,835,627, Cl. 55-387.000.
Dryer, Eldon O., to Shamban, W. S., & Co. Captive plastic seal. 3,836,159, Cl. 277-180.000.
Du Bois, Donald W., to PPG Industries, Inc. Method of treating titanium-containing structures. 3,836,410, Cl. 156-3.000.
Du Pont de Nemours, E. I., and Company: *See—*
Fawzi, Maged M.; and Quebedeaux, Bruno, Jr., 3,836,350.
Gulrich, Leslie W., Jr.; and Morgan, Paul Winthrop, 3,836,498.
Knowles, Richard Norris, 3,836,557.
Koslowski, Manfred Gunter, 3,835,510.
Looney, Catharine E.; Michel, Rudolph H.; and Sahatjian, Ronald A., 3,836,369.
Du Pont du Nemours, E. I., and Company: *See—*
Conwicke, Joel Alfred, 3,836,340.
Dubois, Daniel Jean-Marie: *See—*
Croix-Marie, Francis Marie; and Dubois, Daniel Jean-Marie, 3,835,952.
Duckworth, Allen, to Chandler Evans Inc. Temperature compensated gear pump with travel limited wearblock. 3,836,295, Cl. 418-126.000.
Duclo, Marley J., to HVP, Inc. Liquid cooling system for use on snowmobiles. 3,835,948, Cl. 180-5.00r.
Dudko, Daniil Andreevich; and Danilovich, Mikhail. Planetary fluid motor with internal meshing. 3,836,292, Cl. 418-63.000.
Duer, Morris J., to General Motors Corporation. Connecting device with expanding splines. 3,836,272, Cl. 403-359.000.
Duffield, Peter L.: *See—*
Burnett, Mackenzie; Brady, Cyrus T.; Duffield, Peter L.; and Houser, Phillip H., 3,836,913.
Duffield, Peter L., to Mead Corporation, The. Catcher for a jet drop recorder. 3,836,914, Cl. 346-75.000.
Duggins, James. Bowling glove. 3,835,472, Cl. 2-161.00a.
Duhy, Kenneth W.; and Jones, John, Jr., to Pfizer Inc. Dispensing container of folded disposable towels. 3,836,045, Cl. 221-63.000.
Duke, Keith A.; and Messina, Benedicto U., to International Business Machines Corporation. Data storage system with deferred error detection. 3,836,957, Cl. 340-146.lal.
Dully, Floyd I.: *See—*
Meyer, Barthold F.; Dully, Floyd I.; Gergoe, Bela; Kazewych, Bohdan; and Hebert, Robert M., 3,835,678.
Duncan, James Ritchie; and Hannaford, Colin Donald, to Ferranti Limited. Microwave limiter having variable capacitance diode in tuned cavity. 3,836,875, Cl. 333-17.000.
Dunlop Company Limited, The: *See—*
Bishton, Albert A., 3,835,907.
Dunlop Limited: *See—*
Stimson, Ian Leonard; Dowell, Frederick Sidney; and Healy, Benedict Pascal, 3,836,201.
Dunne, Maurice J., to Unimation, Inc. Record-playback manipulator system utilizing hydraulic microbit actuators. 3,835,750, Cl. 91-35.000.
Dunthorne, Hector B., to United Aircraft of Canada Limited. Ablative seal. 3,836,156, Cl. 277-53.000.
Durametallic Corporation: *See—*
Hummer, Herbert B., 3,836,157.
Durecka, John; and Crosby, Philip S., to Tektronix, Inc. Means for reducing effects of differential cutoff. 3,836,811, Cl. 315-12.000.
Duvall, Kenneth M.; and Miller, Gerald K., to GTE Sulvania Incorporated. Intrusion detection and locating system. 3,836,899, Cl. 340-261.000.
Dynamit Nobel AG: *See—*
Heuschen, Alexander; Schaefer, Hans; Budich, Wolfgang; Krah, Robert; and Obermeier, Karl, 3,836,274.
Dynamit Nobel Aktiengesellschaft: *See—*
Grosch, Ernst; Gawlick, Heinz; Bendler, Hellmut; and Flach, Karl-Egon, 3,836,170.
Naskar, Sasanka Sekhar; and Renckhoff, Gustav, 3,836,554.
Schreiber, Georg; Schroeder, Heinz; Hoppe, Wolfgang; Hadamovsky, Eugene; Ovenhausen, Hans-Walter; and Piotrowski, Bernhard, 3,836,573.
Eads, Harold O.: *See—*
Robison, James W.; and Eads, Harold O., 3,835,535.
Eagle-Picher Industries, Inc.: *See—*
Ault, Alfred S.; Johnson, Le Roy A.; and Van Dolah, Harry J., 3,836,373.
Earhart, Jack R.; Crocker, James Dennis; and Johnson, John K., to Salem Machine Company. Liquid aerating apparatus. 3,836,130, Cl. 261-142.000.
Earley, James Valentine; Fryer, Rodney Ian; and Walser, Armin, to Hoffmann-La Roche Inc. 2-Lower alkylthio-1H-1,4-benzodiazepines. 3,836,521, Cl. 260-239.0bd.
Eastham, John Frederick; and Laithwaite, Eric Roberts. Linear induction motor with electromagnetic levitation. 3,836,799, Cl. 310-13.000.
Eastman Kodak Company: *See—*
Bundschuh, John J.; and Roman, Robert J., 3,836,239.
Clark, Gary T., 3,836,518.
Gibbons, Burton C.; and Westacott, Harry L., 3,836,987.
Hochreiter, William T., 3,836,933.
Plutchak, Thomas Miles, 3,836,363.
Wood, Lawrence M., 3,836,983.
Ebauches S.A.: *See—*
Saurer, Eric, 3,836,229.

Eberhardt, Hans; and Schaefer, Hans, to Boehringer Ingelheim G.m.b.H. Dermatological compositions containing certain higher alkyl esters of 5-pyrrolidone-(2)-carboxylic acid. 3,836,665, Cl. 424-274.000.

Eckert, John P., Jr.; and Bucks, Robert M., to Sperry Rand Corporation. Four stage storage enhanced logic circuit. 3,836,792, Cl. 307-300.000.

Ed. Zublin Aktiengesellschaft: *See—*
Leonhardt, Fritz; Hahn, Volker; and Fastenau, Werner, 3,835,690.

Eddy, Robert E.: *See—*
Carlson, Richard A.; and Eddy, Robert E., 3,836,788.

Edwards, Cyril H. Animal toilet. 3,835,812, Cl. 119-1.000.

Edwards, Donald W.: *See—*
Griffith, George L.; and Edwards, Donald W., 3,835,782.

Eek, Lars Inge: *See—*
Londahl, Goran Stig; and Eek, Lars Inge, 3,835,764.

Egan, Dale W.; Holstrom, Geoffrey B.; Lord, Harry C.; Stevens, Robert W.; Port, Darrell P.; and Howard, Rollen D., to Environmental Data Corporation. Window assembly for use with a stack monitor. 3,836,237, Cl. 350-319.000.

Ehrat, Kurt, to Gretag Aktiengesellschaft. Self-service shop. 3,836,755, Cl. 235-61.70r.

Ehrengruber, Paul: *See—*
Steinberger, Siegfried; Pflugbell, Mathias; Nagel, Erich; Baasner, Wilhelm; Dreher, Karl; Englert, Werner; Ehrengruber, Paul; and Fleck, Adolf, 3,836,060.

Ehrhardt, John R.: *See—*
Monser, George J.; Hardie, George S.; Ehrhardt, John R.; and Smith, Terry M., 3,836,976.

Eiji Munekata: *See—*
Tagawa, Hiroaki; and Fujii, Kimio, 3,836,631.

Einthoven, Willem Gerard: *See—*
Wheatley, Carl Franklin, Jr.; and Einthoven, Willem Gerard, 3,836,995.

Einthoven, Willem Gerard; Schilp, William Henry; and Todd, Albert Alexander, to RCA Corporation. Semiconductor darlington circuit. 3,836,997, Cl. 357-46.000.

Elazar, Shmuel; and Neville, Dee J., to Statham Instruments, Inc. Fluid flow meters. 3,835,704, Cl. 73-194.00a.

Elder, Robert L.: *See—*
Case, Cecil L.; Elder, Robert L.; and Fell, Ferol S., 3,835,628.

Electricity Council, The: *See—*
Millington, James Peter, 3,836,441.

Electronic Music Studies (London) Limited: *See—*
Cockerell, David, 3,836,909.

Elger, Ronald John, to Mannesmann-Meer Aktiengesellschaft. Hydraulic presses. 3,835,682, Cl. 72-14.000.

Ellin, Seymour, to Polaroid Corporation. Flash photographic system with camera inhibit feature. 3,836,930, Cl. 354-127.000.

Ellison, Charles V., to Water Purification Corporation of America. Irradiator for water purification. 3,836,781, Cl. 250-432.000.

Elmendorf, Armin, to Elmendorf Research, Inc. Method of composing wide continuous bands of veneer. 3,835,902, Cl. 144-310.00b.

Elmendorf Research, Inc.: *See—*
Elmendorf, Armin, 3,835,902.

Elsas, Adolf: *See—*
Dietz, Kurt; Lenert, August; Silbermann, Karl; Appelt, Gunther; and Elsas, Adolf, 3,836,803.

Else, George W.: *See—*
Paul, John M.; Heisler, William C.; and Else, George W., 3,835,788.

Emch, Brooke R.: *See—*
Ernsthausen, Roger E.; and Emch, Brooke R., 3,836,393.

Emeis, Reimer: *See—*
Platzoeder, Karl; Martin, Heinz; and Emeis, Reimer, 3,837,000.
Platzoeder, Karl; Martin, Heinz; and Emeis, Reimer, 38,367,000.

Emerson Electric Co.: *See—*
Driebelbis, Richard C., 3,836,050.
Wightman, Lawrance W., 3,836,135.

Emery, Lewis A.: *See—*
Thoreson, Gene A.; Ley, Richard A.; Miller, Cardell E.; and Emery, Lewis A., 3,836,125.

Emery, William M.; deceased (by Emery, William W.; administrator). Self-help bath seat. 3,835,483, Cl. 4-185.00s.

Emery, William W.: *See—*
Emery, William M., 3,835,483.

Emmons, Donald R. Probe for detecting the level of substances in fluid bodies. 3,836,447, Cl. 204-195.00r.

Endo, Takuya, to Nissan Motor Company, Limited. Liquid contact tilt inertial switch with movable metallic conductive means responsive to acceleration and deceleration forces. 3,836,739, Cl. 200-61.470.

Energy Sciences Incorporated: *See—*
Hughes, Nathaniel, 3,835,810.

Engel, Erland Christoffer, to Smidth, F. L., & Co. Pre-heating apparatus in rotary kiln plant. 3,836,323, Cl. 432-106.000.

Engelhard Minerals & Chemicals Corporation: *See—*
Zysk, Edward D.; Robertson, Allen R.; Cisz, Michael; and Sheridan, Robert W., 3,836,402.

Engelhardt, Albrecht: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Zeile, Karl; Engelhardt, Albrecht; and Traunecker, Werner, 3,836,666.

Engelhart, John M.; and Morrish, William P., to Quality Pool Supply Co. Swimming pool coping. 3,835,481, Cl. 4-172.210.

Engeln, Bernard: *See—*
Finkman, Hans-Ulrich; and Engeln, Bernard, 3,836,607.

Englert, Werner: *See—*
Steinberger, Siegfried; Pflugbell, Mathias; Nagel, Erich; Baasner, Wilhelm; Dreher, Karl; Englert, Werner; Ehrengruber, Paul; and Fleck, Adolf, 3,836,060.

English Clays Lovering Pochin & Company Limited: *See—*
Luke, William George, 3,836,084.

ENM Company: *See—*
Polydoris, Nicholas G.; and Wollar, Burnell J., 3,835,543.

Ennis, Joseph C.; and Winn, Ray, to Development Associates. 3,836,961, Cl. Navigation aid.

Enterprise Machine and Development Corporation: *See—*
Schrader, Victor H.; Polney, Richard J.; and Vermilyea, Peter W., 3,835,511.

Environmental Data Corporation: *See—*
Egan, Dale W.; Holstrom, Geoffrey B.; Lord, Harry C.; Stevens, Robert W.; Port, Darrell P.; and Howard, Rollen D., 3,836,237.

Envirotech Corporation: *See—*
Davis, Steven S., 3,836,006.

Eppes, William R., to Corning Glass Works. Reagent storage and dispensing system. 3,836,335, Cl. 23-259.000.

Erdell, John Buckland. Method for obtaining photographic reproductions in color. 3,835,781, Cl. 101-464.000.

Ergon, Rolf Otto Torbjorn, to Aktiebolaget Bofors. Device for the localisation of an object. 3,836,949, Cl. 340-3.00r.

Ernst, Rudolf, to Kunststoff-Verfahrenstechnik Ernst, Dr. Ing., GmbH. Device for manufacturing coated hard-foam tiles of polyurethane. 3,836,298, Cl. 425-115.000.

Ernsthausen, Roger E.; and Emch, Brooke R., to Owens-Illinois, Inc. Process for applying stress-balanced coating composite to dielectric surface of gas discharge device. 3,836,393, Cl. 117-217.000.

Essex International, Inc.: *See—*
Anderson, Robert L., Jr., 3,835,819.

Esso Research and Engineering Company: *See—*
O'Farrell, Charles P.; and Serniuk, George E., 3,836,511.

Esterdahl, Richard B. Casket lid. 3,835,509, Cl. 27-19.000.

Etablissements Gatineau S.A.: *See—*
Rambaud, Michel, 3,835,762.

Eto, Yoshio, to Xerox Corporation. Development apparatus for electrophotographic printing machine. 3,835,811, Cl. 118-637.000.

Eustance, John W., to General Electric Company. Polyolefin film containing therein widely dispersed fine particles of a dielectric liquid soluble material. 3,836,829, Cl. 317-258.000.

Evans, Arthur J., to Whitlock, Inc. Blower control assembly for vacuum conveyor system. 3,836,288, Cl. 417-307.000.

Evans, Milton R., to Halliburton Company. Electronic combination lock selector unit. 3,835,680, Cl. 70-278.000.

Evans, Norol T., to Hughes Aircraft Company. Automatic data processor. 3,836,964, Cl. 343-7.00a.

Evans, William Thomas; and Fraser, Ian, to Fraser, Ian. Heating, cooling and ventilating grills. 3,836,073, Cl. 236-49.000.

Everlast World Boxing Headquarters Corporation: *See—*
Golomb, David L., 3,836,146.

Evers, William J.; Heinsohn, Howard H., Jr.; and Mayers, Bernard J., to International Flavors & Fragrances Inc. 3-Thioacetyl or benzoyl-alkane-1,4 diones. 3,836,563, Cl. 260-455.00r.

Excelermatic, Inc.: *See—*
Kraus, Charles E., 3,835,974.

Exec (Proprietary) Limited: *See—*
Oliver, George Albert, 3,836,884.

Ezaki Glico Kabushiki Kaisha, Osaka-fu, The: *See—*
Mori, Takahisa; and Matsubara, Izuru, 3,835,989.

Fa. International Pollution Control Systems, Inc.: *See—*
Jakubek, Peter, 3,836,000.

Fairchild Camera and Instrument Corporation: *See—*
Amelio, Gilbert F.; and Salsbury, Phillip J., 3,836,409.

Faison, Robert C.: *See—*
Taylor, Victor E.; Choate, Wallace R.; Banachowski, Stanley; Johnson, Robert W.; and Faison, Robert C., 3,835,743.

Falize, Claude; and Bouniot, Albert, to Rhone-Progil. Process for the transesterification of unsaturated esters. 3,836,576, Cl. 260-486.00r.

Falk, Edward J., to Wagner Electric Corporation. Brake shoe. 3,835,962, Cl. 188-73.100.

Falk, Roland: *See—*
Roller, Hermann; Stritzinger, Heinz; Hartmann, Job-Werner; Falk, Roland; and Balz, Werner, 3,836,395.

Farbwerke Hoechst Aktiengesellschaft: *See—*
Stach, Hans; Hoffmann, Dieter; and Brecht, Heinz, 3,836,552.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Achsel, Eberhard; and Sommer, Siegfried, 3,836,574.
Alt, Hartmuth; Clasen, Hermann; and Cramer, Jurgen, 3,836,440.
Kirsch, Aloys; Fuchs, Otto; and Spietschka, Ernst, 3,836,379.
Krekeler, Hans; Fernholtz, Hans; Freudenberger, Dieter; Schmidt, Hans-Joachim; and Wunder, Friedrich, 3,836,567.
Schafer, Lothar; and Wojtech, Bernhard, 3,836,625.
Stache, Ulrich; Haede, Werner; Fritsch, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,836,520.

Faris, George N.; and DesChamps, Nicholas Howard, to Donbar Development Corporation. Rotatable heat exchanger. 3,835,921, Cl. 165-86.000.

Farnsworth, John Leonard, to Rank Organisation Limited, The. Fully closing iris diaphragm. 3,836,234, Cl. 350-266.000.

Farrell, John J., to Farrell Patent Company. Stripping actuator for molding machine. 3,836,300, Cl. 425-165.000.

Farrell Patent Company: *See—*
Farrell, John J., 3,836,300.
Grazine, William, 3,836,305.

Fastenau, Werner: *See—*
Leonhardt, Fritz; Hahn, Volker; and Fastenau, Werner, 3,835,690.

Favret, Uncas. Apparatus for recovering oil substances from the surface of a body of water. 3,836,004, Cl. 210-242.000.

Fawzi, Maged M.; and Quebedeaux, Bruno, Jr., to Du Pont de Nemours, E. I., and Company. Ureidotriazoles as yield increasing agents for crop plants. 3,836,350, Cl. 71-92.000.

Fechillas, Michael R., to Johnson & Johnson. Synthetic resin binder compositions. 3,836,514, Cl. 260-86.10e.

Federal Carton Corporation: *See—*
Del Priore, Vincent; Rous, Arthur; and Holtzman, Richard, 3,836,066.

Federal Paper Board Company, Inc., mesne: *See—*
Growney, Lawrence J., 3,835,987.

Feind, Klaus: *See—*
Matthias, Guenther; Schulz, Gerhard; Kasper, Werner; and Feind, Klaus, 3,836,583.

Felkner, Floyd R. Self-levelling support for refrigerator or the like. 3,836,162, Cl. 280-6.00r.

Fell, Ferol S.: *See—*
Case, Cecil L.; Elder, Robert L.; and Fell, Ferol S., 3,835,628.

Fenichel, Richard L.: *See—*
Teller, Daniel M.; Guinosso, Charles J.; Bell, Stanley C.; and Fenichel, Richard L., 3,836,639.

Fenton, Donald M., to Union Oil Company of California. Catalytic dehydrogenation of alcohols. 3,836,553, Cl. 260-409.000.

Ferguson, Norman T.: *See—*
Hemsath, Klaus H.; Vereecke, Frank J.; and Ferguson, Norman T., 3,836,320.

Ferment, George R.: *See—*
Calundann, Gordon W.; and Ferment, George R., 3,836,500.

Fernholtz, Hans: *See—*
Krekeler, Hans; Fernholtz, Hans; Freudenberger, Dieter; Schmidt, Hans-Joachim; and Wunder, Friedrich, 3,836,567.

Ferranti Limited: *See—*
Clarke, Graham Morley, 3,836,261.
Duncan, James Ritchie; and Hannaford, Colin Donald, 3,836,875.

Ferrin, Charles R., to Combustion Engineering, Inc. Heater. 3,835,816, Cl. 122-156.000.

Ferris, Byron S. Method of producing three-dimensional foam plastic forms. 3,836,624, Cl. 264-321.000.

Ferro, Patrick Vincent: *See—*
Coulter, Wallace H.; Ingram, Marylou; and Ferro, Patrick Vincent, 3,836,849.

Fetting, Karl-Ernst: *See—*
Telle, Otto; Molls, Hans-Heinz; and Fetting, Karl-Ernst, 3,836,649.

Fibrex Corporation: *See—*
Myers, Homer S., 3,835,635.

Fieber, Richard A.: *See—*
Santilli, Arthur A.; Kim, Dong H.; and Fieber, Richard A., 3,836,529.

Figl, Johann: *See—*
Braidt, Helfried; and Figl, Johann, 3,835,878.

Filtaflo (Proprietary) Limited: *See—*
Radford, Colin M., 3,836,002.

Finch, Dan Milton. Roadway marker device. 3,836,275, Cl. 404-13.000.

Findlay, Peter Michael; Savage, Sidney Clifford; Klee, John Michael; and Gamble, Joseph Eric, to Wildt Mellor Bromley Limited. Patterning mechanisms for knitting machines. 3,835,669, Cl. 66-50.00r.

Finkman, Hans-Ulrich; and Engeln, Bernard, to Chemische Werke Huls Aktiengesellschaft. Thermoplastic molding composition comprising polybutene and polypropylene. 3,836,607, Cl. 260-897.00a.

Firma Fordertechnik Hamburg Harry Lassig: *See—*
Lassig, Harry, 3,836,020.

Fischer, Wilhelm; Krause, Friedrich; Biesner, Walter; and Sonnenmoser, Hubert, to Lever Brothers Company. Device for use in the production of cheese. 3,836,688, Cl. 426-518.000.

Fishback, Alton J.: *See—*
Calvert, Rodney K.; and Fishback, Alton J., 3,835,979.

Fisher, David G.; and Hill, Jerry W., to Dayco Corporation. Endless power transmission belt and method of making same. 3,835,720, Cl. 74-231.00c.

Fitzpatrick, William E.: *See—*
Tilp, Robert F.; Fitzpatrick, William E.; and Cubitt, Robert B., 3,836,044.

Fives Lille Cail: *See—*
Retali, Roger; Chielens, Alain; and Boussekey, Bernard, 3,836,103.

Flach, Karl-Egon: *See—*
Grosch, Ernst; Gawlick, Heinz; Bendler, Hellmut; and Flach, Karl-Egon, 3,836,170.

Flaminaire: *See—*
Claude, Beaudouin Jean, 3,835,579.

Fleck, Adolf: *See—*
Steinberger, Siegfried; Pflugbell, Mathias; Nagel, Erich; Baasner, Wilhelm; Dreher, Karl; Englert, Werner; Ehrengruber, Paul; and Fleck, Adolf, 3,836,060.

Fleet Electronics Limited: *See—*
Mansfield, John William Brian, 3,836,900.

Fleissner, Heinz, to Vepa AG. Process for the continuous treatment of textile materials. 3,835,490, Cl. 8-149.100.

Fleissner, Heinz; and Wilhelm, Ernst, to Vepa AG. Apparatus for the continuous treatment, particularly dyeing, of fibrous material. 3,835,671, Cl. 68-5.00d.

Flipot, Alfred-Jean; Papeleux, Paul; and LaFontaine, Ivan, to Belgonucleaire and Centre d'Elude de l'Energie Nucleaire. Nuclear fuel rods having end plugs with bores there through sealed by frangible membranes. 3,836,431, Cl. 176-79.000.

FMC Corporation: *See—*
Franko-Filipasic, Borivoj Richard; and Start, John Francis, 3,836,599.
Franko-Filipasic, Borivoj Richard; Orwoll, Edward Francis; and Start, John Francis, 3,836,608.
Houston, Robert K.; and Irving, Donald W., 3,836,299.
Saldick, Jerome, 3,836,634.
Tomelleri, Giordano, 3,835,765.

Foote, Daniel J., to Master Lock Company. Laminated padlock body with incorporated band-forming slab. 3,835,676, Cl. 70-52.000.

Forber, David K.; and Nehrich, Richard B., Jr. Apparatus for viewing a distant fluorescent object. 3,836,782, Cl. 250-461.000.

Forbes Jones, Robin Mackay, to International Nickel Company, Inc., The. Addition agent. 3,836,358, Cl. 75-122.000.

Forbro Design Corp.: *See—*
Nercessian, Sarkis, 3,836,907.

Ford Motor Company: *See—*
Colvin, Alex D., 3,836,253.
Hilderbrandt, Lynn H., 3,836,415.
Lunsford, Max W., 3,836,128.
Van Wicklin, Warren A., Jr., 3,836,204.
Wolgemuth, James H., 3,835,827.

Forgrave, Malcolm C., to Leelanau Industries, Inc. Word game apparatus. 3,836,150, Cl. 273-135.00d.

Forsheda Ideutveckling AB: *See—*
Sporre, Sten Ragnar, 3,836,622.

Foseco International Limited: *See—*
Jago, Edward John; and McCray, Walter A., 3,836,112.
Vandemark, William Jacob; and Wood, Michael Stuart, 3,835,913.

Fossett, Wallace Lee, to ACF Industries, Incorporated. Flushing arrangement for railway cars. 3,836,203, Cl. 302-53.000.

Foster Grant Co., Inc.: *See—*
Petitto, Albert C., 3,836,042.

Foster, Jack D.: *See—*
Kirk, Russell F.; Moreno, Frederick E.; and Foster, Jack D., 3,836,236.

Foster, Karl; and Seidel, Joseph, to Westinghouse Electric Corporation. Glass coated electrical steel sheet and articles prepared therefrom. 3,836,389, Cl. 117-129.000.

Fouquet-Werk Frauz & Planck: *See—*
Schiebel, Alfred; Kuhn, Falk; Beuter, Hermann; and Planck, Alfred, Jr., 3,835,668.

Fowler, William H., to Western Electric Company, Incorporated. Distributing a fluid evenly over the surface of an article. 3,836,388, Cl. 117-120.000.

Fox Motori di CECI Napoleone & C.s.a.s.: *See—*
Bonvicini, Giacomo, 3,836,800.

Fram Corporation: *See—*
DeJong, Allan W., 3,836,284.

Francey, Melvin H.: *See—*
Spanke, Edwin A.; Carrieri, Louis F.; and Francey, Melvin H., 3,835,971.

Franck, Howard S., to Philco-Ford Corporation. Refrigerator cabinet construction. 3,835,660, Cl. 62-277.000.

Frankel, Alvin L.: *See—*
Newman, Martin; and Frankel, Alvin L., 3,835,869.

Frankenfeld, John W.: *See—*
Wright, Donald L.; and Frankenfeld, John W., 3,836,672.

Franklin Equipment, Inc.: *See—*
Barker, Bernard A.; and Daggett, Ronald L., 3,835,882.

Franklyn, Robert Alan. Pneumatic chest exerciser. 3,836,141, Cl. 272-79.00c.

Franko-Filipasic, Borivoj Richard; and Start, John Francis, to FMC Corporation. Liquid products produced by reaction of phosphonitrilic esters with phosphoric anhydride. 3,836,599, Cl. 260-927.00n.

Franko-Filipasic, Borivoj Richard; Orwoll, Edward Francis; and Start, John Francis, to FMC Corporation. Process for self condensing phosphonitrilic chloresters and product. 3,836,608, Cl. 260-926.000.

Franks, Aud J.; and Johnson, Will A. Pattern control for tufting machines. 3,835,797, Cl. 112-79.00a.

Franz, John E., to Monsanto Company. Dicarbamoyl hydroxamates. 3,836,572, Cl. 260-472.000.

Franz, William F.: *See—*
Cole, Edward L.; Hess, Howard V.; and Franz, William F., 3,836,427.

Fraser, Ian: *See—*
Evans, William Thomas; and Fraser, Ian, 3,836,073.

Frater, Georg; Greuter, Hans; and Schmid, Hans, to Hoffmann-La Roche Inc. Tricyclo[5,4,0,0^{3,9}] undeca-5,10-dien-ones. 3,836,584, Cl. 260-586.00m.

Frazee, Orville P.: *See—*
Wolford, Earl W.; and Frazee, Orville P., 3,836,289.

Freck, James A.; and Kondrot, Leonard V., to American Maize-Products Company. Process for making simulated meat and cheese products. 3,836,677, Cl. 426-103.000.
Freed, Meier E.; and Potoski, John R., to American Home Products Corporation. Benzobicycloalkane amines for inducing analgesia. 3,836,670, Cl. 424-330.000.
Freese, Martin P. Safety applique. 3,836,420, Cl. 161-19.000.
Freisberg, Karl-Otto: *See*—
Irmscher, Klaus; Freisberg, Karl-Otto; Orth, Dieter; Nowak, Herbert; and Simane, Zdenek, 3,836,527.
Frejd, Walter T. Pool device for handicapped players. 3,836,145, Cl. 273-23.000.
Frenkel, Mark Isaakovich. Straightway valve. 3,835,883, Cl. 137-512.100.
Frens, Gerrit; Van Den Boomgaard, Jan; and Van Suchtelen, Jaap, to U. S. Philips Corporation. Slotted anode X-ray tube. 3,836,804, Cl. 313-60.000.
Fresard, Marcel, to Mefina S.A. Assembly comprising a presser foot and a graduated rule. 3,835,798, Cl. 112-150.000.
Freudenberg, Carl: *See*—
Bischoff, Dieter, 3,836,422.
Freudenberger, Dieter: *See*—
Krekeler, Hans; Fernholtz, Hans; Freudenberger, Dieter; Schmidt, Hans-Joachim; and Wunder, Friedrich, 3,836,567.
Frey, Walter; and Toth, Istvan, to Sandoz Ltd. Process for the production of 1-nitroanthraquinones. 3,836,546, Cl. 260-369.000.
Frey, Walter; and Yarborough, William, to Sandoz Ltd. Nitration process. 3,836,601, Cl. 260-369.000.
Fricke, Gunter: *See*—
Singewald, Arno; Fricke, Gunter; and Juno, Detlef, 3,835,996.
Fried, Krupp Gesellschaft mit beschrankter Haftung: *See*—
Schwarz, Wilhelm; Tromp, Henricus; and Heinz, Winfried, 3,835,790.
Friedel, Rudolf; and Natter, Bernd, to Siemens Aktiengesellschaft. Rotary anode for an X-ray tube. 3,836,808, Cl. 313-330.000.
Fries, Hjalmar Elias, to ITT Industries, Inc. Treatment for waste water or the like. 3,836,456, Cl. 210-6.000.
Frigoscandia Contracting AB: *See*—
Londahl, Goran Stig; and Eek, Lars Inge, 3,835,764.
Frisbee, Belmont Jr., to United States of America, Navy. Dual mode radar system. 3,836,966, Cl. 343-14.000.
Frisch, Erling; and Andrews, Harry N., to Westinghouse Electric Corporation. Means for rapidly exposing the core of a nuclear reactor for refueling. 3,836,429, Cl. 176-29.000.
Frisch, Erling; and Andrews, Harry N., to Westinghouse Electric Corporation. Cable support structure for enabling a nuclear reactor to be refueled rapidly. 3,836,430, Cl. 176-33.000.
Fritsch, Werner: *See*—
Stache, Ulrich; Haede, Werner; Fritsch, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,836,520.
Fritz Buser AG., Maschinenfabrik: *See*—
Klemm, Martin, 3,836,367.
Frohlich, Alfons; and Hochlehnert, Franz, to Opti-Holding A.G. Method of and apparatus for thermofixing of slide-fastener coupling chains. 3,836,413, Cl. 156-73.000.
Frost, Lawrence W., to Westinghouse Electric Corporation. Compositions of cyanoimide polymers and heterocyclic polymers made from cyanoimide precursors. 3,836,506, Cl. 260-47.0cp.
Fruktow, Gelb N.: *See*—
Kurland, Richard M.; and Fruktow, Gelb N., 3,836,979.
Frungel, Frank: *See*—
Frungel, Frank; and Lohse, Horst (said Lohse assor. to said), 3,836,233.
Frungel, Frank; and Lohse, Horst, said Lohse assor. to said Frungel, Frank. Anti-flash shutter with two compartments. 3,836,233, Cl. 350-266.000.
Frye, David, to Norco Sales and Manufacturing Company. . 3,836,879, Cl. 335-136.000.
Fryer, Rodney Ian: *See*—
Earley, James Valentine; Fryer, Rodney Ian; and Walser, Armin, 3,836,521.
Fuchs, Otto: *See*—
Kirsch, Aloys; Fuchs, Otto; and Spietschka, Ernst, 3,836,379.
Fuji Photo Film Co., Ltd.: *See*—
Kiritani, Masataka; Matsukawa, Hiroharu; and Aoki, Masayuki, 3,836,383.
Osada, Chiaki; and Murata, Masataka, 3,836,437.
Fuji Photo Film Company, Ltd.: *See*—
Tamai, Yasuo, 3,836,384.
Fuji Spinning Company Limited: *See*—
Kodama, Mikio, 3,836,086.
Fujii, Kimio: *See*—
Tagawa, Hiroaki; and Fujii, Kimio, 3,836,631.
Fujisawa, Hideya, to Nippondenso Co. Ltd. Fuel injection system for internal combustion engine. 3,835,820, Cl. 123-32.0ea.
Fujisawa, Kiyoshi: *See*—
Yasui, Koichi; Yamamoto, Kazuo; Itami, Kazuo; Fujisawa, Kiyoshi; and Sasaki, Toshio, 3,836,336.
Fujitou Limited: *See*—
Sugioka, Ryoichi, 3,836,721.
Fujiware, Tadafumi: *See*—
Sumimoto, Toru; Matsushita, Shigeo; Fujiware, Tadafumi; Koizumi, Ken; and Yamazaki, Tetsuya, 3,836,348.
Fukazawa, Kiyohiko: *See*—
Saito, Akio; Fukazawa, Kiyohiko; and Motoyama, Yukitoshi, 3,836,264.
Fukinbara, Itaru: *See*—
Yano, Nubumitsu; Fukushima, Masao; Fukinbara, Itaru; Kishi, Masanori; and Kimura, Kazuyoshi, 3,836,531.
Fukuda, Kazuo: *See*—
Yamada, Keisho; Umemura, Sumio; Ohdan, Kyoji; and Fukuda, Kazuo, 3,836,586.
Fukuda, Tomio: *See*—
Yamamoto, Makoto; Fukuda, Tomio; and Nakatake, Masamichi, 3,836,756.
Fukui, Shigetaka: *See*—
Furusho, Hirosuke; and Fukui, Shigetaka, 3,835,725.
Fukushima, Juichi; and Nagahiro, Michinori, to Matsushita Electric Industrial Co., Ltd. Tape reel and tape reel storing magazine. 3,836,096, Cl. 242-197.000.
Fukushima, Masao: *See*—
Yano, Nubumitsu; Fukushima, Masao; Fukinbara, Itaru; Kishi, Masanori; and Kimura, Kazuyoshi, 3,836,531.
Fullerton, Baxter T., to Warner & Swasey Company, The. Machine tool with indexible tool support. 3,835,516, Cl. 29-47.000.
Funk, John W.; Merlino, Eugene L., Jr.; and Woods, Daniel J., to Barasch, Stephen and Burroughs Corporation. Print train permitting accelerated printing speeds in a line printer. 3,835,771, Cl. 101-111.000.
Funk, Roland: *See*—
Lux, Benno; Funk, Roland; Schachner, Herbert; and Triquet, Christian, 3,836,392.
Furusho, Hirosuke; and Fukui, Shigetaka, to Daihatsu Kogyo Kabushiki Kaisha. Steering assembly of a motor vehicle. 3,835,725, Cl. 74-492.000.
Gaenzler, Wolfgang: *See*—
Schroeder, Guenter; Gaenzler, Wolfgang; Uddrich, Peter; and Babuliak, Josef, 3,836,551.
GAF Corporation: *See*—
Lewis, Alan Glueck, 3,836,228.
Gagnon, Richard T., to Scitronix Corporation. Speech synthesizer responsive to a digital command input. 3,836,717, Cl. 179-1.0sa.
Gaines, Lewis H., to Tyco Laboratories, Inc. Lithium batteries and method of preparing a positive electrode material therefor. 3,836,403, Cl. 136-83.00r.
Galantay, Eugene E., to Sandoz-Wander, Inc. 4-Substituted-benzocyclohepta-[1,2,d]-oxazoles and thiazoles. 3,836,538, Cl. 260-302.00f.
Gallenberger, Robert J.: *See*—
Bickel, John E.; and Gallenberger, Robert J., 3,836,971.
Galloway, Glen L., to United States of America, Navy. Pressetable singly-input voltage-time integrator. 3,836,791, Cl. 307-293.000.
Galperin, Alexandr Lvovich; Serebryannikov, Albert Semenovich; Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; Lukoshkov, Vladimir Iosifovich; Lileev, Valeryan Petrovich; Loschilin, Evgeny Dmitrievich; Rutkevich, Zinovy Yakovlevich; Sakharov, oris Alexandrovich; and German, Zinovy Antolievich. Device for winding weft thread on the spools of weft carriers in travelling wave looms. 3,835,893, Cl. 139-12.000.
Galyan, Boris Afanasievich: *See*—
Sakharnov, Vasily Alexeevich; Popov Alfred Nikolaevich; Tishura, Vladimir Ivanovich; Galyan, Boris Afanasievich; and Skulsky, Jury Valentinovich, 3,836,746.
Gamble, Joseph Eric: *See*—
Findlay, Peter Michael; Savage, Sidney Clifford; Klee, John Michael; and Gamble, Joseph Eric, 3,835,669.
Gamble, Peter Dennis, to Lubrizol Corporation, The. Fuel meter. 3,835,700, Cl. 73-113.000.
Gamco Industries, Inc.: *See*—
Horak, Martin S., 3,836,943.
Garavelli, Frank D.: *See*—
Milette, Kenneth A.; Garavelli, Frank D.; and Tolleson, Thomas H., 3,836,194.
Garcin, Maurice; and Gauthier, Adrien, to Societe les Piler Wonder. Electrochemical generators of the metal-air or metal-oxygen type. 3,836,398, Cl. 136-86.00a.
Gardner, Clive D. Truck wheel dolly. 3,836,027, Cl. 214-331.000.
Gardner, James J.: *See*—
Boltz, Duane A.; Gardner, James J.; and Hautau, Charles F., 3,835,620.
Garner, Robert; and Bolliger, Hans Rudolf, to Ciba-Geigy AG. Pressure-sensitive copying material. 3,836,382, Cl. 117-36.200.
Garretson, Henry D. Surgical bone punch. 3,835,860, Cl. 128-310.000.
Garrett Corporation, The: *See*—
Goodrich, Joseph A., 3,835,641.
Garrett, Wayne O., to Hansco, Inc. Sphere and angle turning attachment for milling machines. 3,835,528, Cl. 29-560.000.
Gates & Sons, Inc.: *See*—
Gates, H. Gordon; and Brendel, Robert, 3,835,586.
Gates, H. Gordon; and Brendel, Robert, to Gates & Sons, Inc. Knockdown window frame. 3,835,586, Cl. 49-463.000.
Gaudek, Jani: *See*—
Basu, Prithwis; Neumann, Guenter; and Gaudek, Jani, 3,835,745.
Gauthier, Adrien: *See*—
Garcin, Maurice; and Gauthier, Adrien, 3,836,398.
Gawlick, Heinz: *See*—
Grosch, Ernst; Gawlick, Heinz; Bendler, Hellmut; and Flach, Karl-Egon, 3,836,170.

Gearhart, Walter S. Hydrostatic leveling apparatus with control operator. 3,835,548, Cl. 33-367.000.

Gebr. Bohler & Co. AG.: *See—*
Holzgruber, Wolfgang W.; Machner, Peter J. V.; and Schwarz, Ludwig, 3,835,915.

Gebr. Hofman KG: *See—*
Muller, Richard, 3,835,712.

Gehman, John B.; and Ravenis, Joseph V. J., to General Dynamics Corporation. Sensor system. 3,836,960, Cl. 343-5.0pd.

Geier, Timothy D., to Caterpillar Tractor Company. Bucket positioner for loaders. 3,836,032, Cl. 214-764.000.

Geiger, David H. Roof construction. 3,835,599, Cl. 52-2.000.

Geldner, Ernst: *See—*
Schreiner, Horst; Geldner, Ernst; and Dietz, Helmut, 3,836,807.

Gem Insect Control, Inc.: *See—*
Soulos, George D., 3,835,577.

General Binding Corporation: *See—*
Staats, Henry N., 3,836,414.

General Dynamics Corporation: *See—*
Gehman, John B.; and Ravenis, Joseph V. J., 3,836,960.
Mattia, Armand D.; and Bracka, Bruno W., 3,836,101.
Schillreff, George H., 3,836,968.

General Electric Company: *See—*
Bowers, David Lee, 3,835,865.
Burke, Hubert K.; and Michon, Gerald J., 3,836,773.
Chesmejef, Stephen, 3,835,650.
Cole, Herbert S., Jr., 3,836,231.
Eustance, John W., 3,836,829.
Herzog, Rollie R., 3,836,815.
Parker, Rollin James, 3,836,802.
Piccone, Dante E.; Somos, Istvan; and McIntyre, James E., 3,836,994.
Schultz, Warren J., 3,836,697.
Watrous, Donald L., 3,836,824.
Yu, Se Puan; and Tantraporn, Wirojana, 3,836,872.

General Foods Corporation: *See—*
Leidy, Harold T.; Kerrigan, Charles M.; and Byble, Duane C., 3,836,678.
Schara, Robert E.; Shoaf, Myron D.; and Berry, Charles P., 3,836,685.
Yadlowsky, Slawko, 3,836,682.

General Instrument Corporation: *See—*
Gibson, Richard D.; and Whelan, Robert D., 3,836,911.
Seely, John Leland; and Wanlass, Frank M., 3,836,862.

General Motors Corporation: *See—*
Amann, Charles A., 3,835,642.
Bauer, Richard J., 3,836,005.
Bernard, James A.; and Brucken, Byron L., 3,835,719.
Carlson, Richard A.; and Eddy, Robert E., 3,836,788.
Cracraft, Larry F.; Oppmann, Richard C.; and Whitaker, Edward G., 3,836,853.
Cracraft, Larry F.; Houser, David E.; and Whitaker, Edward G., 3,836,955.
Duer, Morris J., 3,836,272.
Hoffman, Robert E.; and Wright, Carl J., 3,835,880.
Horley, Clifford William, 3,836,303.
Keller, Robert C., 3,835,892.
King, Kenneth K.; and White, Robert L., 3,835,667.
Klees, Gerard T., 3,836,188.
Kochendorfer, Donald P.; and Whistler, Charles C., Jr., 3,835,661.
Marta, Henry A.; and Swenson, Curtis A., 3,835,787.
Meyer, Barthold F.; Dully, Floyd I.; Gergoe, Bela; Kazewych, Bohdan; and Hebert, Robert M., 3,835,678.
Mondt, James R., 3,835,920.
Ranft, Ernst L.; Paddock, Gordon R.; and Murray, Jeremiah J., 3,835,646.
Shakespear, Horacio; and Steele, James A., 3,835,757.
Whelan, James E., 3,835,949.
Whistler, Charles C., Jr.; and Meyer, Ronald E., 3,836,221.

General Signal Corporation: *See—*
Clarke, James A.; Jacobus, John J.; and Lager, Eric Peter, 3,836,768.
Huffman, Theron, 3,835,647.
Teague, Roger W.; and Snyder, Richard Paul Largo, 3,836,463.

Gengard, Sven-Erik Olof; and Johansson, Yngve Lennart, to SDF Industrial Trading and Development Company B.V. Spiral groove bearings. 3,836,214, Cl. 308-159.000.

Geren, Keith E.; Papineau, Milton D.; and Routh, Claude C., to United States of America, Navy. Heterodyne autocorrelation guidance system. 3,836,951, Cl. 340-6.00r.

Gergoe, Bela: *See—*
Meyer, Barthold F.; Dully, Floyd I.; Gergoe, Bela; Kazewych, Bohdan; and Hebert, Robert M., 3,835,678.

Geri, Don W.: *See—*
Hurtig, Roy E.; and Geri, Don W., 3,836,091.

German, Zinovy Antolievich: *See—*
Galperin, Alexandr Lvovich; Serebryannikov, Albert Semenovich; Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; Lukoshkov, Vladimir Iosifovich; Lileev, Valeryan Petrovich; Loschilin, Evgeny Dmitrievich; Rutkevich, Zinovy Yakovlevich; Sakharov, oris Alexandrovich; and German, Zinovy Antolievich, 3,835,893.

Gess, Larry C. Apparatus for filling and labeling containers. 3,835,897, Cl. 141-98.000.

Getgen, Lawrence E., to Armour-Moore Marine Service Limited. Combination hybrid and switching circuit and method utilizing resonant transfer. 3,836,720, Cl. 179-15.0fd.

Geusic, Joseph Edward: *See—*
Bobeck, Andrew Henry; Geusic, Joseph Edward; and Hagedorn, Bassett, 3,836,898.

Gewerkschaft Eisenhutte Westfalia: *See—*
Rafael, Werner, 3,835,981.

Ghougasian, John; Hart, Jon; Juliusburger, Hans Yohanan; and Lowy, Paul, to International Business Machines Corporation. Drop charge sensing apparatus for an ink jet printing system. 3,836,912, Cl. 346-75.000.

Gibbons, Burton C.; and Westacott, Harry L., to Eastman Kodak Company. Photographic chemical waste handling apparatus and method. 3,836,987, Cl. 354-300.000.

Gibson, Richard D.; and Whelan, Robert D., to General Instrument Corporation. Coding arrangemet for fiber optic digital display device. 3,836,911, Cl. 340-380.000.

Giesemann, Rolf: *See—*
Weber, Karl Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,836,652.
Weber, Karl Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, deceased, 3,836,653.

Gillette Company, The: *See—*
Petrillo, Richard J., 3,835,532.
Sastri, Aiyaswami S., 3,835,537.
Sokol, Phillip Edward; and Tsai, Hu-Chu, 3,836,326.

Girault, Pierre: *See—*
Perronnet, Jacques; and Girault, Pierre, 3,836,582.

Girling Limited: *See—*
Margetts, Hugh Grenville, 3,835,964.
Moss, Norman Sidney, 3,835,960.

Gleim, William K. T., to Universal Oil Products Company. Conversion of black oil with metal boride or borohydride catalyst. 3,836,452, Cl. 208-108.000.

Glenn, Edwin E., Jr.: *See—*
Strubhar, Malcolm K.; and Glenn, Edwin E., Jr., 3,835,928.

GLN, Inc.: *See—*
Nachtigal, Chester L.; Hillberry, Benny M.; Goodson, Raymond E.; and Leonard, Robert G., 3,836,757.

Glory Kogyo Kabushiki Kaisha: *See—*
Kinoshita, Yoshio; and Akamatsu, Mitsuhiro, 3,836,945.

Gloucester Railway Carriage Wagon Company Limited: *See—*
Sinclair, Frederick William, 3,835,789.

Godbier, Thomas A. Non-leak safety valve in filling line for vehicle gasoline tank. 3,835,900, Cl. 141-348.000.

Goddard, Norman H., to JCN Wire Industries Ltd. Rigid structure for shelving unit. 3,835,793, Cl. 108-109.000.

Goetze, Rudolf: *See—*
Wilisch, Jurgen; Goetze, Rudolf; Jaeck, Frank; Nackmayr, Dietrich; Rehberg, Heinz; and Thuy, Hans-Joachim, 3,836,731.

Goff, McKinley; and Crum, Donald, to Middletown Manufacturing Co., Inc., mesne. Recliner with vertically movable headrest. 3,836,197, Cl. 297-391.000.

Goffe, William L., to Xerox Corporation. Imaging method. 3,836,362, Cl. 96-1.100.

Golbeck, Bernard J., to Oak Industries Inc. Operator plate common to multiple pushbutton switch operators allowing simultaneous actuation of plural switch assemblies during momentary or. 3,836,736, Cl. 200-5.00b.

Golborn, Peter, to Hooker Chemical Corporation. Process for acylating dialkylacyl phosphonates. 3,836,609, Cl. 260-971.000.

Goldberg, Edward M.; and Bazell, Seymour, to MPC/KurgiSil. T tube. 3,835,863, Cl. 128-350.00r.

Goller, Robert L.: *See—*
Seiferth, Oscar E.; Goller, Robert L.; Grindrod, Paul E.; and Radloff, Harry L., 3,836,679.

Golomb, David L., to Everlast World Boxing Headquarters Corporation. Baseball base ground fastening device. 3,836,146, Cl. 273-25.000.

Golota, John H., to I-T-E Imperial Corporation. Adjustable contact nozzle and retractable arcing chamber for gas blast circuit breakers. 3,836,741, Cl. 200-148.00r.

Goltermann, Klaus-Dieter: *See—*
Lorenz, Ewald; Schlink, Wilhelm; Kunzler, Bruno; and Goltermann, Klaus-Dieter, 3,836,266.

Gomi, Yoshifumi: *See—*
Shimodaira, Tadayoshi; and Gomi, Yoshifumi, 3,835,770.

Goodman, George A.: *See—*
Schneider, Charles; and Goodman, George A., 3,835,697.

Goodrich, B. F., Company, The: *See—*
Cimprich, Francis J., 3,835,591.
Kolycheck, Edmond G., 3,836,555.

Goodrich, Joseph A., to Garrett Corporation, The. Ram fluid turbine. 3,835,641, Cl. 60-716.000.

Goodson, Raymond E.: *See—*
Nachtigal, Chester L.; Hillberry, Benny M.; Goodson, Raymond E.; and Leonard, Robert G., 3,836,757.

Goodyear Tire & Rubber Company, The: *See—*
Carter, Russell P., Jr., 3,836,487.
Hewitt, John H.; and Richardson, Deane W., 3,835,977.
Neugroschl, Ernst J., 3,836,614.

Pyke, James B., 3,836,513.
Wideman, Lawson G., 3,836,602.
Goodyear Tire and Rubber Company, The: *See*—
Kirschner, Gerald D.; and Woessner, William H., 3,835,785.
Goralski, Christian T., to Dow Chemical Company, The. 1,1-Dibromo-1-cyanomethanesulfonamides. 3,836,566, Cl. 260-465.50r.
Gordon Engineering Company: *See*—
Lucas, Paul G., 3,836,847.
Gordon, Ronnie D., to Continental Oil Company. Isomerization of 1,2-dichloro-3-butene to 1,4-dichloro-2-butene. 3,836,592, Cl. 260-654.00r.
Goren, Yorman: *See*—
Lloyd, Samuel Harry, III; and Goren, Yorman, 3,835,800.
Gorenschek, Matthias. Saddle construction, seat member for use therein, and method. 3,835,621, Cl. 54-44.000.
Gorlin, Igor Konstantinovich: *See*—
Perelmutr, Alexandr Semenovich; Berlin, Alexandr Zinovievich; Gorlin, Igor Konstantinovich; and Traxler, Alexandr Gustavovich, 3,836,129.
Goss Gas, Inc.: *See*—
Yerkins, Stephen J., 3,836,081.
Gottreu, Harold G.: *See*—
Thompson, Phil W.; Thompson, Ralph F.; and Gottreu, Harold G., 3,835,502.
Gottschalk, Lawrence A., to Union Carbide Corporation. Combination label for packaged product and printed-on removable decal. 3,835,564, Cl. 40-306.000.
Gotz, Hans, to Daimler-Benz Aktiengesellschaft. Driver cab of trucks. 3,836,191, Cl. 296-1.00s.
Gould Inc.: *See*—
Strauss, Howard J.; and Hill, Edward S., 3,836,400.
Gould, Jay W., III; and Phillipson, Phillip William, to Minnesota Mining and Manufacturing Company. Fiber reinforced resin fishing rod. 3,835,569, Cl. 43-18.0gf.
Grace, Daniel C.: *See*—
Seiferth, Oscar E.; Austin, Glenn M.; and Grace, Daniel C., 3,836,039.
Grace, W. R., & Co.: *See*—
Hutchison, John Grear, 3,836,709.
Perdue, Richard Russell, 3,835,618.
Gracia, Robert F.; Laughrey, Richard A.; and Tuohey, Paul F., to Itek Corporation. Process of printing by driography. 3,835,780, Cl. 101-454.000.
Graham, Douglas J.: *See*—
Bhuta, Pravin G.; Johnson, Robert L.; Graham, Douglas J.; and Aprahamian, Robert, 3,836,950.
Graham, Richard H., to Cincinnati Industries, Inc. Laminated grinding wheel. 3,836,345, Cl. 51-297.000.
Grandchamp, Pierre Andre: *See*—
Burckhardt, Christoph Benedikt; and Grandchamp, Pierre Andre, 3,836,948.
Granitzki, Karl Ernst; Schiefer, Paul; and Hess, Heinrich, to VFG Vertriebsgesellschaft fur feuerfeste und giesstechnische Erzeugnisse mbH. Method of making liner in an induction melting furnace. 3,836,613, Cl. 264-30.000.
Granson, Peter R. Combination knife & shear. 3,835,533, Cl. 30-146.000.
Gray, Robert F., to A-T-O Inc. Toe board bracket. 3,836,106, Cl. 248-229.000.
Grayson, Martin; and Keough, Patricia Tarpey, to American Cyanamid Company. Organo phosphonium salts. 3,836,587, Cl. 260-606.50f.
Grazine, William, to Farrell Patent Company. Trigger bar actuator for molding machine. 3,836,305, Cl. 425-242.00b.
Great Lakes Carbon Corporation: *See*—
Novy, Anton R., 3,836,434.
Greatbatch, Wilson, to Greatbatch, Wilson, Ltd. Device for converting nuclear energy into electrical energy. 3,836,798, Cl. 310-3.000.
Greatbatch, Wilson, Ltd.: *See*—
Greatbatch, Wilson, 3,836,798.
Green, Dennis Clinton; and Young, William Robert, to International Business Machines Corporation. Nematic materials. 3,836,478, Cl. 252-408.000.
Gregory, Frank. Pipe coupling. 3,836,184, Cl. 285-417.000.
Gregory, Ted, to Arens Controls, Inc. Lawn mower control. 3,835,726, Cl. 74-501.00p.
Greiter, Franz Johann. Items of apparel, especially sport clothing. 3,835,470, Cl. 2-79.000.
Grelat, Maurice; and Archambault, Jean, to Ciba-Geigy AG. Process for the manufacture of anthraquinone derivatives. 3,836,548, Cl. 260-376.000.
Gressitt, Tillman Johnson; Koliss, Peter Paul; and Ramsey, Raymond Bolton, to Bell Telephone Laboratories, Incorporated. Cable terminal. 3,836,696, Cl. 174-41.000.
Gretag Aktiengesellschaft: *See*—
Ehrat, Kurt, 3,836,755.
Greuter, Hans: *See*—
Frater, Georg; Greuter, Hans; and Schmid, Hans, 3,836,584.
Grider, Lyle D.; and Cleereman, Robert J., to Bucyrus-Erie Company. Removable outrigger assembly with rotatable jack. 3,836,012, Cl. 212-145.000.
Grieder, Charles K. Swimming turtle. 3,835,581, Cl. 46-92.000.
Grieve, Robin L.: *See*—
Reymore, Harold E., Jr.; Sayigh, Adnan A. R.; and Grieve, Robin L., 3,836,424.
Griffith, Cecil B.: *See*—
Thomas, Jerry D.; and Griffith, Cecil B., 3,836,359.
Griffith, George L.; and Edwards, Donald W., to Commercial Solvents Corporation. Product and method. 3,835,782, Cl. 102-27.00r.
Griger, Alfons, to Siemens Aktiengesellschaft. Coaxial connector. 3,836,946, Cl. 339-177.00r.
Grigg, Donald A., to Silverbow Industries, Inc. Bee feeder for hives. 3,835,487, Cl. 6-5.000.
Grindrod, Paul E.: *See*—
Seiferth, Oscar E.; Goller, Robert L.; Grindrod, Paul E.; and Radloff, Harry L., 3,836,679.
Grisar, Johann Martin; and Richardson Merrell Inc. Method of preparing dibenzo (D,G) (1,3) dioxocin acids and salts thereof. 3,836,543, Cl. 260-340.300.
Griscom, Richard W.; and Brader, James J., Jr., to Chemetron Corporation. Composition and method for stabilizing trans-diethylstilbestrol. 3,836,674, Cl. 424-346.000.
Grivna, Gerald J., 1/2 to Clark, J. Wickham. Swim fin. 3,835,493, Cl. 9-307.000.
Grosch, Ernst; Gawlick, Heinz; Bendler, Hellmut; and Flach, Karl-Egon, to Dynamit Nobel Aktiengesellschaft. Device for the inflation of safety cushions in vehicles. 3,836,170, Cl. 280-150.0ab.
Grosholz, James R.; Crowley, Charles L.; and Hutter, Charles G., to Air-Shields, Inc. Wound drainage equipment. 3,836,287, Cl. 417-306.000.
Gross, David A.: *See*—
Kotok, Alan; Kent, Allan R.; and Gross, David A., 3,836,889.
Gross, Marvin C.; Stana, Regis R.; Klem, Franklin D.; and Shaffer, Raymond E., to Westinghouse Electric Corporation. System for concentrating solutions by low pressure recycling. 3,836,457, Cl. 210-23.000.
Grosswiller, Leo J. Jr.; Deutsch, Fritz A.; and Leipelt, Paul A., to Diebold, Incorporated. Remote depository construction. 3,836,980, Cl. 346-22.000.
Groupement Atomique Alsacienne Atlantique: *See*—
Malaval, Claude, 3,836,286.
Grove, Marvin H., to M & J Valve Company and M & J Development Company. Meter proving apparatus and method. 3,835,695, Cl. 73-3.000.
Growney, Lawrence J., to Federal Paper Board Company, Inc., mesne. Story book carton locking assembly. 3,835,987, Cl. 206-45.110.
Gruett, Donald G., to Oil-Rite Corporation. Combined liquid level and temperature gauge. 3,835,708, Cl. 73-292.000.
Grumman Aerospace Corporation: *See*—
Courten, Henry C.; and Mattal, Joseph P., 3,836,258.
Grundig E.M.C. Elektro-Mechanische Versuchsanstalt: *See*—
Hegendorfer, Max, 3,836,908.
Grunwald, Raymond, to Canadian Patents and Development Limited. Suturing instrument anvil bushing part. 3,836,061, Cl. 227-155.000.
GTE International Incorporated: *See*—
Celestini, Nadios, 3,836,725.
GTE Sulvania Incorporated: *See*—
Duvall, Kenneth M.; and Miller, Gerald K., 3,836,899.
GTE Sylvania Incorporated: *See*—
Ammann, Eugene O.; and Yarborough, Joe Michael, 3,836,866.
Barre, Wade E.; and Orbanic, Robert S., 3,836,939.
Kirk, Russell F.; Moreno, Frederick E.; and Foster, Jack D., 3,836,236.
Lagos, Costas C., 3,836,477.
Radloff, Harry John, 3,836,840.
Szeverenyi, Nikolaus A.; and Thompson, David F., 3,836,882.
Gualdi, Giorgio: *See*—
Reni, Cesare; Lugo, Luigi; and Gualdi, Giorgio, 3,836,588.
Guest, Jack Bernard; and Guest, Kathleen Ethel Joyce. Apparatus for filing documents. 3,836,219, Cl. 312-183.000.
Guest, Kathleen Ethel Joyce: *See*—
Guest, Jack Bernard; and Guest, Kathleen Ethel Joyce, 3,836,219.
Guinosso, Charles J.: *See*—
Teller, Daniel M.; Guinosso, Charles J.; Bell, Stanley C.; and Fenichel, Richard L., 3,836,639.
Gulf & Western Manufacturing Company: *See*—
Smith, Lynwood Vincent, 3,836,049.
Spanke, Edwin A.; Carrieri, Louis F.; and Francey, Melvin H., 3,835,971.
Gulf Oil Corporation: *See*—
Davison, Clifford C.; and Ott, Reinhold A., 3,836,158.
Gullekson, Edwin H. Three dimensional X-ray opaque foreign body marker device. 3,836,776, Cl. 250-312.000.
Gulrich, Leslie W., Jr.; and Morgan, Paul Winthrop, to Du Pont de Nemours, E. I., and Company. Polyamides and their anisotropic dopes. 3,836,498, Cl. 260-30.80r.
Gunnerman, Robert J.: *See*—
Hartzell, George W.; and Gunnerman, Robert J., 3,835,978.
Guntersdorfer, Max; and Thomann, Helmut, to Siemens Aktiengesellschaft. Piezoelectric filter. 3,836,877, Cl. 333-72.000.
Gustavsson, Tommy Henning Bruno: *See*—
Schoeps, Knut Christian; and Gustavsson, Tommy Henning Bruno, 3,835,934.
Gustavsson, Tommy Henning Bruno; Karden, Karl Gosta; and Westerberg, Sven Peter Jonas, to Atlas Copco Aktiebolag. Reading apparatus for a program control system. 3,836,752, Cl. 235-61.11j.
Gutman, Anatoly Lvovich; Prefsman, Vladimir Alexandrovich; Abramov, Leonid Mikhailovich; and Shokurov, Jury Stepanovich. Detachable telescopic joint. 3,836,273, Cl. 403-377.000.
Gutowski, Antoni P.: *See*—
De Jong, Maarten C.; and Gutowski, Antoni P., 3,835,549.

Guzman, Adolfo M.; Hu, Paul Y.; and Waller, Tracy N., to International Business Machines Corporation, Capstan/tachometer assembly. 3,836,774, Cl. 250-231.00r.

Gyongyos, Ivan, to Prolizenz AG. Continuous casting of non-ferrous metals. 3,835,917, Cl. 164-279.000.

Haas, Hans: *See—*
Hartlapp, Gerhard; Haas, Hans; and Stendenbach, Karl-Heinz, 3,836,675.

Haas, Werner E. L.: *See—*
Adams, James E.; Becker, James H.; and Haas, Werner E. L., 3,836,230.

Hach Chemical Company: *See—*
Stookey, Lawrence L., 3,836,331.

Hackenberg, Robert A., to Robertson Paper Box Co., Inc. Lock bottom box with medial divider. 3,836,065, Cl. 229-27.000.

Hackstein, Karl-Gerhard; Hrovat, Milan; and Wolff, Willi, to Nukem, G.m.b.H. Apparatus for the production of pressed block fuel elements of high power for gas cooled high temperature reactor. 3,836,311, Cl. 425-406.000.

Hadamovsky, Eugene: *See—*
Schreiber, Georg; Schroeder, Heinz; Hoppe, Wolfgang; Hadamovsky, Eugene; Ovenhausen, Hans-Walter; and Piotrowski, Bernhard, 3,836,573.

Hadjidjanian, Huguette Micheline Mary Nadot, to Societe Civile Le Brin. Flowmeter. 3,835,705, Cl. 73-194.00f.

Haede, Werner: *See—*
Stache, Ulrich; Haede, Werner; Fritsch, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,836,520.

Hafner, Edwin A., to Hafner Industries, Inc. Vinyl chloride polymer recovery process. 3,836,486, Cl. 260-2.300.

Hafner Industries, Inc.: *See—*
Hafner, Edwin A., 3,836,486.

Hagedorn, Bassett: *See—*
Bobeck, Andrew Henry; Geusic, Joseph Edward; and Hagedorn, Bassett, 3,836,898.

Hagemann, Hermann; Wingler, Frank; and Pollheide, Dieter, to Bayer Aktiengesellschaft. Binders for the electrostatic powder-spraying process. 3,836,604, Cl. 260-836.000.

Hagen, Clarence A., to Weck, Edward & Company, Inc. Surgical air drill. 3,835,858, Cl. 128-305.000.

Hahn, Volker: *See—*
Leonhardt, Fritz; Hahn, Volker; and Fastenau, Werner, 3,835,690.

Hahnkamm, Volker; Rademachers, Jakob; Henkel, Hanno; Brandle, Karl; and Schafer, Kurt, to Bayer Aktiengesellschaft. Production of composite pigments of iron oxide and carbon black. 3,836,378, Cl. 106-288.00r.

Haines, Russell R., to PACO Packaging, Inc. Tamperproof package. 3,835,995, Cl. 206-42.000.

Haitz, Roland H.; Sedlewicz, Paul G.; Stirrup, Keith A.; Hilbiber, David F.; and Teichner, Robert W., to Hewlett-Packard Company. Photon isolator with improved photodetector transistor stage. 3,836,793, Cl. 307-303.000.

Hakanson, Nils L.: *See—*
Touchette, Albert Francis; and Hakanson, Nils L., 3,836,252.

Halasz, Stephen J.; and Winston, Charles D., to Aerojet-General Corporation. Parallel multiple channel display system. 3,836,795, Cl. 315-13.00c.

Hall, Charles M.: *See—*
Johnson, Herbert G.; Wright, John B.; Hall, Charles M.; and Warner, Donald T., 3,836,541.

Hall, Gaddis G. Conductor clamp. 3,836,102, Cl. 248-74.00r.

Hall, Joseph F., Jr., to United States of America, Navy. Multiple channel optical system. 3,836,232, Cl. 350-174.000.

Hall, Wayne Culver, Jr. Pipe cleaning apparatus and method. 3,835,587, Cl. 51-9.000.

Hall, William Bernard; and Koskulitz, Joseph Allen, to RCA Corporation. Heat dissipation for power integrated circuit devices. 3,836,825, Cl. 317-100.000.

Hall, William C.: *See—*
Boenke, Clyde O.; Miller, Murray H.; Levine, Michael R.; Rigotte, Victor H.; Vivian, Weston E.; and Hall, William C., 3,836,888.

Hallal, Alfred Jean. Connecting device for modular constructions. 3,836,218, Cl. 312-111.000.

Hallas, Robert; Martin, Jerry Roy; and Tadanier, John Soloman, to Abbott Laboratories. Sulfonyl derivatives of erythromycin. 3,836,519, Cl. 260-210.00e.

Halliburton Company: *See—*
Clement, Clarence C., Jr., 3,835,926.
Evans, Milton R., 3,835,680.
Hyde, Walter E., 3,835,889.

Halvorson, Kenneth M., Sr. Unitized electric heater assembly for a coffee percolator. 3,836,713, Cl. 219-441.000.

Ham, Rowland Herbert, to Ronway Engineering Company Limited. Demountable load carrying bodies. 3,836,178, Cl. 280-415.00b.

Hamada Printing Press Mfg. Co., Ltd.: *See—*
Shimizu, Shigeru, 3,836,139.

Hamasaki, Masafumi: *See—*
Nonaka, Kohei; Tanaka, Masaho; Maki, Takeshi; Harada, Ikuo; and Hamasaki, Masafumi, 3,836,168.

Hamberger, Lois Inez. Supports for ornamental designed articles. 3,836,419, Cl. 161-18.000.

Hammond, Clif: *See—*
Olson, Rich L.; Roland, Murray C.; and Hammond, Clif, 3,836,078.

Hampton, Richard J.; and Bonnell, Brian P., to Ogilvie Flour Mills Company, Limited, The. Starch-based adhesive compositions. 3,836,376, Cl. 106-213.000.

Hannaford, Colin Donald: *See—*
Duncan, James Ritchie; and Hannaford, Colin Donald, 3,836,875.

Hannum, Kenneth O.: *See—*
Dawson, George J.; Hannum, Kenneth O.; and Himmelman, Gerald L., 3,836,018.

Hansco, Inc.: *See—*
Garrett, Wayne O., 3,835,528.

Hansen Manufacturing Company, The: *See—*
Norton, James F.; and Creadon, William F., 3,836,114.

Hansford, Rowland C. Conversion process and catalysts. 3,836,454, Cl. 208-111.000.

Hanstad, Robert D. License plate retainer. 3,835,563, Cl. 40-209.000.

Harada, Ikuo: *See—*
Nonaka, Kohei; Tanaka, Masaho; Maki, Takeshi; Harada, Ikuo; and Hamasaki, Masafumi, 3,836,168.

Haraikawa, Tetsuo, to Tokico Ltd. Brake cylinder assembly. 3,835,970, Cl. 188-345.000.

Hard Metals Limited: *See—*
Bingham, Henry, 3,835,944.

Hardie, George S.: *See—*
Monser, George J.; Hardie, George S.; Ehrhardt, John R.; and Smith, Terry M., 3,836,976.

Harding, George W., to Poly-San Corporation. Chemical toilet cabana. 3,835,480, Cl. 4-116.000.

Hardman, Carl C., to Westinghouse Electric Corporation. Iron electrode for alkaline cells. 3,836,397, Cl. 136-25.000.

Harkness, Richard Ernest, to Combustion Engineering, Inc. Noise reducing apparatus for a vibrating screen sifting machine. 3,835,955, Cl. 181-33.00k.

Harper, Ronald Ernest; and Mole, Michael James, to Arkana Limited. Joint for joining structural members. 3,835,610, Cl. 52-755.000.

Harrer, Paul H.: *See—*
Rosendahl, John R.; Lay, Willard W.; and Harrer, Paul H., 3,835,629.

Harris, John P.; Mantey, John P.; and Wood, David R., to International Business Machines Corporation. Adaptive motor acceleration. 3,836,833, Cl. 318-270.000.

Harris, Richard T.: *See—*
Sismore, William W., 3,835,520.

Harris-Intertype Corporation: *See—*
Krygeris, Algirdas J., 3,835,777.
Wasil, Joseph J., 3,835,597.
Weidman, William H., 3,835,776.

Hart, Jon: *See—*
Ghougasian, John; Hart, Jon; Juliusburger, Hans Yohanan; and Lowy, Paul, 3,836,912.

Harth, Wolfgang, to Licentia Patent-Verwaltungs-G.m.b.H. Electrical companent. 3,836,990, Cl. 357-6.000.

Hartlapp, Gerhard; Haas, Hans; and Stendenbach, Karl-Heinz, to Knapsack Aktiengesellschaft. Purification of yellow phosphorus. 3,836,675, Cl. 423-322.000.

Hartmann, Heinrich; Stelter, Siegfried; and Trelewsky, Heinz-Guenter, to Braunschweigische Maschinenbauanstalt. Mobile device for reception, precleaning and piling of beets. 3,835,997, Cl. 209-73.000.

Hartmann, Job-Werner: *See—*
Roller, Hermann; Stritzinger, Heinz; Hartmann, Job-Werner; Falk, Roland; and Balz, Werner, 3,836,395.

Hartwig, Karl; and Vossnacke, Juergen, to AGFA-Gevaert Aktiengesellschaft. Electrophotographic drying and fixing device. 3,836,322, Cl. 432-59.000.

Hartzell, George W.; and Gunnerman, Robert J., to Hartzell Industries, Inc. Log transfer apparatus. 3,835,978, Cl. 198-22.00r.

Hartzell Industries, Inc.: *See—*
Hartzell, George W.; and Gunnerman, Robert J., 3,835,978.

Harwood, Ralph Russell. Fishhook extractor. 3,835,574, Cl. 43-53.500.

Hasegawa, Goro; Nakamoto, Soichi; Takishima, Yoshiyuki; Mashimo, Yukio; Taguchi, Tatsuya; Nakamura, Zenzo; and Taguchi, Tetsuya, to Canon Kabushiki Kaisha. Exposure setting device for flash photographing. 3,836,922, Cl. 354-51.000.

Hashimoto, Hideo: *See—*
Noguchi, Masaaki; Yanagioka, Hiroshi; Kanai, Toshio; Nishiguchi, Kazuo; Hashimoto, Hideo; Abe, Katuhiro; Masuko, Tomio; Mahino, Zenichi; and Kogawa, Yosio, 3,836,630.

Hashioka, Noriyasu, to Hope Kabushiki Kaisha. Heel supporting device for a ski safety binding. 3,836,163, Cl. 280-11.35t.

Hashizume, Nobuo: *See—*
Kataoka, Shoei; Hashizume, Nobuo; Tomizawa, Kazutaka; Morisue, Mititada; and Komamiya, Yasuo, 3,836,989.

Hastwell, Peter J.; Smith, Ian E.; and Scroggs, Dennis I., to Savin Business Machines Corporation. Copy machine having photoconductive belt. 3,836,245, Cl. 355-8.000.

Haupt, Heinrich: *See—*
Tacke, Peter; Haupt, Heinrich; Blank, Heinz Ulrich; Bockmann, August; and Rudolph, Hans, 3,836,501.

Hauptmann, Karl Heinz: *See—*
Weber, Karl Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,836,652.

Hauptmann, Karl Heinz, deceased: *See—*
Weber, Karl Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, deceased, 3,836,653.

Hauptmann, Maria: *See—*
Weber, Karl Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,836,652.
Hauptmann, Marie, heir: *See—*
Weber, Karl Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, deceased, 3,836,653.
Hautau, Charles F.: *See—*
Boltz, Duane A.; Gardner, James J.; and Hautau, Charles F., 3,835,620.
Hawthorne, Vaughn T., to Keystone Industries, Inc. Draft gear pocket adapter. 3,836,013, Cl. 213-54.000.
Hayashi, Yoshihiro; and Iwatsuki, Masahiro, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Safety belt locking device. 3,836,171, Cl. 280-150.0sb.
Hazeltine Corporation: *See—*
Wheeler, Harold A., 3,836,977.
Healey, Daniel J., III; and Driscoll, Michael M., to Westinghouse Electric Corporation. Low noise VHF crystal harmonic oscillator. 3,836,873, Cl. 331-116.00r.
Healy, Benedict Pascal: *See—*
Stimson, Ian Leonard; Dowell, Frederick Sidney; and Healy, Benedict Pascal, 3,836,201.
Hebert, Robert M.: *See—*
Meyer, Barthold F.; Dully, Floyd I.; Gergoe, Bela; Kazewych, Bohdan; and Hebert, Robert M., 3,835,678.
Heck, Copnelis Johannes Adrianus Gerardus, to U. S. Philips Corporation. Arrangement for igniting and supplying a gas-and/or vapour discharge lamp. 3,836,816, Cl. 315-94.000.
Heck, Walter. Method and apparatus for making hairpieces. 3,835,868, Cl. 132-5.000.
Hefele, Josef, Dr., to Kufner Textilwerke KG. Lightweight shoe, in particular indoor or leisure wear shoe. 3,835,555, Cl. 36-9.00r.
Hegele, Arnold C. Portable step and stand for use in hunting wildlife including the same. 3,835,958, Cl. 182-92.000.
Hegendorfer, Max, to Grundig E.M.C. Elektro-Mechanische Versuchsanstalt. Digital to analog converter. 3,836,908, Cl. 340-347.0da.
Hehl, Karl. Injection molding machine with lifting device. 3,836,301, Cl. 425-192.000.
Heidelberger Druckmaschinen Aktiengesellschaft: *See—*
Heidt, Heinrich, 3,835,774.
Heidt, Heinrich, to Heidelberger Druckmaschinen Aktiengesellschaft. Device in offset printing presses for controlling the supply of dampening liquid to dampening equipment of the presses. 3,835,774, Cl. 101-148.000.
Heidt, Peter C. Tricycle. 3,836,177, Cl. 280-269.000.
Heinemann, Albert; and Opferkuch, Wilhelm, to Kromer, Theodore KG. Time control safety lock for a safe or the like with indicating means outside the safe for indicating the time control of the lock. 3,835,679, Cl. 70-271.000.
Heinsohn, Howard H., Jr.: *See—*
Evers, William J.; Heinsohn, Howard H., Jr.; and Mayers, Bernard J., 3,836,563.
Heinz, Winfried: *See—*
Schwarz, Wilhelm; Tromp, Henricus; and Heinz, Winfried, 3,835,790.
Heisler, William C.: *See—*
Paul, John M.; Heisler, William C.; and Else, George W., 3,835,788.
Hekal, Ihab M.; and Chelton, Raymond G., to Continental Can Company, Inc. Metal coating compositions prepared from aqueous dispersions of ionomer and uron resins. 3,836,494, Cl. 260-29.4ua.
Helander, Elton L., to Helander Products, Inc. Adjusting collar for single revolution spring clutch. 3,835,972, Cl. 192-26.000.
Helander Products, Inc.: *See—*
Helander, Elton L., 3,835,972.
Heldreth, Robert L., to Westinghouse Electric Corporation. Pump with self-cleaning lint filter. 3,836,001, Cl. 210-167.000.
Helmcke, Conrad; Hermann, Walter; and Kraus, Peter, to Messerschmitt-Bolkow-Blohm GmbH. Apparatus for measuring the distance between two successive objects. 3,836,770, Cl. 246-167.00d.
Hemsath, Klaus H.; Vereecke, Frank J.; and Ferguson, Norman T., to Midland-Ross Corporation. Minimum scale reheating furnace and means relating thereto. 3,836,320, Cl. 432-11.000.
Henderson, David Alexander Whyte; and Crawford, Brian Thomas, to Pennant Display & Engineering Limited. Moire fringe optical display and projection equipment. 3,836,240, Cl. 352-87.000.
Henderson, Eulas W., to Phillips Petroleum Company. Removal of nitrogen oxides from carbon black pellet dryer purge gas. 3,835,622, Cl. 55-48.000.
Henkel & Cie GmbH: *See—*
Kuhling, Dieter, 3,836,636.
Henkel, Hanno: *See—*
Hahnkamm, Volker; Rademachers, Jakob; Henkel, Hanno; Brandle, Karl; and Schafer, Kurt, 3,836,378.
Hennart, Claude, to Ciba-Geigy AG. Pesticidal compositions containing phosphoric esters and divalent sulphur compounds. 3,836,643, Cl. 424-175.000.
Hepp, Wolfgang; Pimiskern, Klaus; and Herbert, Werner, to Dornier System GmbH. Suspension of supporting bodies for spiral groove bearings. 3,836,212, Cl. 308-15.000.
Herbert, Werner: *See—*
Hepp, Wolfgang; Pimiskern, Klaus; and Herbert, Werner, 3,836,212.
Hercules Incorporated: *See—*
Diveley, William R., 3,836,610.
Hermann, Paul: *See—*
Dopkin, Joseph A.; and Hermann, Paul, 3,836,215.
Hermann, Walter: *See—*
Helmcke, Conrad; Hermann, Walter; and Kraus, Peter, 3,836,770.
Hertel, Heinz E.: *See—*
Bookless, George W.; Hertel, Heinz E.; and Kearney, Robert L., 3,836,250.
Hertel, Heinz E.; Kearney, Robert L.; and Weber, Paul E., to Bell & Howell Company. Illumination system for film recording apparatus. 3,836,251, Cl. 355-70.000.
Hertel, Heinz E.; and Konagamitsu, George K., to Bell & Howell Company. Light sealed film cartridge. 3,836,984, Cl. 354-275.000.
Herzog, Rollie R., to General Electric Company. Emergency instant-start lighting system for rapid start lighting devices. 3,836,815, Cl. 315-86.000.
Herzog, William S. Power transmission apparatus. 3,835,731, Cl. 74-682.000.
Hess, Heinrich: *See—*
Granitzki, Karl Ernst; Schiefer, Paul; and Hess, Heinrich, 3,836,613.
Hess, Howard V.: *See—*
Cole, Edward L.; Hess, Howard V.; and Franz, William F., 3,836,427.
Hesston Corporation: *See—*
Case, Cecil L.; Elder, Robert L.; and Fell, Ferol S., 3,835,628.
Hetzel, Max, to Societe Suisse pour l'Industrie Horlogere Managemant Services SA. Method of making low friction miniature gear drive. 3,835,519, Cl. 29-177.000.
Heuschen, Alexander; Schaefer, Hans; Budich, Wolfgang; Krah, Robert; and Obermeier, Karl, to Dynamit Nobel AG. Self-aligning, miter joint connecting means. 3,836,274, Cl. 403-401.000.
Hewgley, Robert E., Jr.: *See—*
Abbatiello, Leonard A.; Hewgley, Robert E., Jr.; and Turner, Paul C., 3,836,834.
Hewitt, John H.; and Richardson, Deane W., to Goodyear Tire & Rubber Company, The. Handrail guard. 3,835,977, Cl. 198-16.00r.
Hewlett-Packard Company: *See—*
Haitz, Roland H.; Sedlewicz, Paul G.; Stirrup, Keith A.; Hilbiber, David F.; and Teichner, Robert W., 3,836,793.
Schneider, Richard F.; and Bloedorn, Arthur R., 3,836,758.
Heyer Inc.: *See—*
Springer, Edward M., 3,835,772.
Hickmann, Horst R.: *See—*
Kees, George, Jr.; and Hickmann, Horst R., 3,835,861.
Hide-A-Lite Industries Ltd.: *See—*
Robinson, Samuel Harper, 3,836,760.
Higashi, Kouzi: *See—*
Takayasu, Tatsunori; and Higashi, Kouzi, 3,836,883.
High Temperature Systems, Inc.: *See—*
Koch, Fenton C., 3,836,280.
Hignite, Walter. Rubbish disposal method. 3,835,652, Cl. 61-35.000.
Higo, Akio; Itaya, Nobushige; Hirai, Hajime; and Yoshioka, Hirosuke, to Sumitomo Chemical Company, Ltd. Process for production of lower alkyl esters of cis-chrysanthemum mono-carboxylic acid. 3,836,568, Cl. 260-468.00h.
Hilbiber, David F.: *See—*
Haitz, Roland H.; Sedlewicz, Paul G.; Stirrup, Keith A.; Hilbiber, David F.; and Teichner, Robert W., 3,836,793.
Hildebrandt, Christian, to Volkswagenwerk Aktiengesellschaft. Safety belt fastening. 3,836,172, Cl. 280-150.0sb.
Hilderbrandt, Lynn H., to Ford Motor Company. Method of fabricating a precontoured unitized electrical wiring harness. 3,836,415, Cl. 156-296.000.
Hill, Edward S.: *See—*
Strauss, Howard J.; and Hill, Edward S., 3,836,400.
Hill, Jerry W.: *See—*
Fisher, David G.; and Hill, Jerry W., 3,835,720.
Hill, William Frank; and Cattermole, Roger Edward, to Lucas, Joseph, (Industries) Limited. Petrol injection systems for internal combustion engines. 3,835,821, Cl. 123-32.0eh.
Hillberry, Benny M.: *See—*
Nachtigal, Chester L.; Hillberry, Benny M.; Goodson, Raymond E.; and Leonard, Robert G., 3,836,757.
Hillekens, Conrardus Ludovicus Anthonius, to U.S. Philips Corporation. Signal receiver for receiving signals of different frequency. 3,836,727, Cl. 179-84.0ve.
Himmelman, Gerald L.: *See—*
Dawson, George J.; Hannum, Kenneth O.; and Himmelman, Gerald L., 3,836,018.
Hirai, Hajime: *See—*
Higo, Akio; Itaya, Nobushige; Hirai, Hajime; and Yoshioka, Hirosuke, 3,836,568.
Hitachi, Ltd.: *See—*
Akiyama, Seikichi; Kozuka, Hirotsugu; and Megumi, Koichi, 3,836,632.
Ikegami, Kazutoshi; Yamamoto, Mitsuoki; Toudo, Kenji; and Miyanaka, Motosi, 3,836,316.
Ikegami, Kazutoshi; Honda, Juichi; Miyanaka, Motosi; and Yamamoto, Mitsuoki, 3,836,857.
Kasano, Hiroyuki, 3,836,408.
Maeda, Minoru; and Ikushima, Ichiro, 3,836,874.
Murakami, Toshio; and Shibata, Akira, 3,836,707.

Sakamoto, Hisashi; Sasaki, Takeshi; Mikami, Satoshi; and Nakashima, Yoichi, 3,837,002.
Yamashita, Seizi; and Onishi, Kazuo, 3,836,801.
Hix, Charles M., Jr., to Arcadia Refining Company. Underwater storage device. 3,835,653, Cl. 61-46.500.
Hochlehnert, Franz: *See—*
Frohlich, Alfons; and Hochlehnert, Franz, 3,836,413.
Hochreiter, William T., to Eastman Kodak Company. Collapsible camera. 3,836,933, Cl. 354-187.000.
Hodge, Allan M. Trash container lid system. 3,836,036, Cl. 220-32.000.
Hodge, Edward B., to Commercial Solvents Corporation. Composition containing hexetidine and z-methyl-nitro-1,3-dimorpholinopropane. 3,836,654, Cl. 424-248.000.
Hoffman, Jacob. Contact lens edge modifying machine. 3,835,590, Cl. 51-105.01g.
Hoffman, John J.; and White, Jay E., Jr., to Woodall Industries Inc. Vehicle lighting unit assembly. 3,836,763, Cl. 240-41.600.
Hoffman, John T. Versatile tool holder. 3,835,666, Cl. 64-6.000.
Hoffman, Louis S.: *See—*
Spruyt, Harry; and Hoffman, Louis S., 3,835,905.
Hoffman, Robert B. Vehicle frame straightening tool. 3,835,692, Cl. 72-442.000.
Hoffman, Robert E.; and Wright, Carl J., to General Motors Corporation. Dishwasher fill system. 3,835,880, Cl. 137-387.000.
Hoffman, William B. Auxiliary bicycle brake device. 3,835,724, Cl. 74-489.000.
Hoffmann, Dieter: *See—*
Stach, Hans; Hoffmann, Dieter; and Brecht, Heinz, 3,836,552.
Hoffmann, George A., Jr., to Certain-Teed Products Corporation, mesne. Building insulation with decorative facing. 3,835,604, Cl. 52-105.000.
Hoffmann, Heinz: *See—*
Burckhardt, Christoph Benedikt; and Grandchamp, Pierre Andre, 3,836,948.
Hoffmann, Hermann: *See—*
Wilkinson, Richard C.; and Hoffmann, Hermann, 3,836,517.
Hoffmann-La Roche Inc.: *See—*
Burckhardt, Christoph Benedikt; and Grandchamp, Pierre Andre, 3,836,948.
Earley, James Valentine; Fryer, Rodney Ian; and Walser, Armin, 3,836,521.
Frater, Georg; Greuter, Hans; and Schmid, Hans, 3,836,584.
Stempel, Arthur; and Westley, John, 3,836,516.
Hoffstetter, George O. Chain construction. 3,835,721, Cl. 74-245.00r.
Hoganas AB: *See—*
Lindskog, Per Folke; and Svensson, Lars-Erik, 3,836,355.
Hokao, Zenjiro; Shibata, Teijiro; and Yasukabe, Siro, to Tobishima Kensetsu Kabushiki Kaisha. Drilling and cutting submarine rocks. 3,835,937, Cl. 175-6.000.
Hokkaido Sugar Company, Ltd.: *See—*
Shimizu, Junichi; and Kaga, Toshio, 3,836,432.
Hokuriku Electric Industry Co., Ltd.: *See—*
Takayasu, Tatsunori; and Higashi, Kouzi, 3,836,883.
Holcomb, Norman L.: *See—*
Wardwell, Charles H.; and Holcomb, Norman L., 3,836,743.
Holder, Charles A., Jr. Liquid dispensing nozzle. 3,835,899, Cl. 141-214.000.
Holler, Robert W.; and Rothrock, Richard E., to Owens-Corning Fiberglas Corporation. Electric glass furnace with zone temperature control. 3,836,689, Cl. 13-6.000.
Holley, Carl A. Pellet reclamation process. 3,836,353, Cl. 75-3.000.
Hollinger, Paul: *See—*
Davis, Paul; Schneider, David; and Hollinger, Paul, 3,835,994.
Hollingsworth, Ashley J., to Newell Industries, Inc. Tape record medium and roll. 3,836,094, Cl. 242-192.000.
Hollowell, John V.: *See—*
Padula, Arthur H.; Meyer, William G.; and Hollowell, John V., 3,835,600.
Holman, John Michael Leigh: *See—*
Bond, Donald Spencer; and Holman, John Michael Leigh, 3,836,969.
Holman, Robert E., Jr. Cargo beam. 3,836,174, Cl. 280-179.00r.
Holmen, Reynold E.; and Cook, Jack E., to Minnesota Mining and Manufacturing Company. Heat-bondable retroreflective sheeting. 3,836,227, Cl. 350-105.000.
Holstrom, Geoffrey B.: *See—*
Egan, Dale W.; Holstrom, Geoffrey B.; Lord, Harry C.; Stevens, Robert W.; Port, Darrell P.; and Howard, Rollen D., 3,836,237.
Holtzman, Richard: *See—*
Del Priore, Vincent; Rous, Arthur; and Holtzman, Richard, 3,836,066.
Holzgruber, Wolfgang W.; Machner, Peter J. V.; and Schwarz, Ludwig, to Gebr. Bohler & Co. AG. Arrangement for use in making slab ingots by electricslag-refining. 3,835,915, Cl. 164-252.000.
Homer, John C., III; and Stock, John R., to Stock Equipment Company. High voltage power supply. 3,836,838, Cl. 323-7.000.
Honda, Juichi: *See—*
Ikegami, Kazutoshi; Honda, Juichi; Miyanaka, Motosi; and Yamamoto, Mitsuoki, 3,836,857.
Honeywell Inc.: *See—*
Bruno, Robert Peter; and Naugler, Albert Winston, 3,836,779.
Cuthbertson, Kenneth J., 3,836,827.
Rotier, Donald J., 3,836,953.
Stauffer, Norman L., 3,836,772.
Honeywell Information Systems, Inc.: *See—*
Crump, Robert O.; and Bethsold, Karl R., 3,835,521.
Hooker Chemical Corporation: *See—*
Carlson, Ronald H., 3,836,556.
Golborn, Peter, 3,836,609.
Schultz, Robert F.; and Cook, Edward H., Jr., 3,836,450.
Takahashi, Akio, 3,836,510.
Wagner, George M.; and Sitgreaves, Norman E., 3,836,423.
Hoos, Joseph W.; and Hreschak, Bohdan O., to Nabisco, Inc. Method of preparing shelf-stable pates. 3,836,683, Cl. 426-357.000.
Hoover-Seng Company: *See—*
Mizelle, Ned W., 3,836,198.
Hope Kabushiki Kaisha: *See—*
Hashioka, Noriyasu, 3,836,163.
Hoppe, Wolfgang: *See—*
Schreiber, Georg; Schroeder, Heinz; Hoppe, Wolfgang; Hadamovsky, Eugene; Ovenhausen, Hans-Walter; and Piotrowski, Bernhard, 3,836,573.
Horak, Martin S., to Gamco Industries, Inc. Electrical connector for coaxial cable. 3,836,943, Cl. 339-97.00p.
Horbury, Eric Anthony: *See—*
Kay, Christopher John; and Horbury, Eric Anthony, 3,836,473.
Horii, Taro, to Maki Manufacturing Co., Ltd. Method and apparatus for conveyance of goods by vibrating plates. 3,835,983, Cl. 198-220.0ba.
Horley, Clifford William, to General Motors Corporation. Method of and apparatus for the manufacture of mouldings. 3,836,303, Cl. 425-214.000.
Horn, Norman E.: *See—*
Mickle, John L.; and Horn, Norman E., 3,835,822.
Horneff, Hans, to Bosch, Robert, Fernsehanlagen GmbH. Measuring test signals of test lines which have passed through an amplifier, particularly a video amplifier. 3,836,860, Cl. 330-2.000.
Horowitz, Jack W.: *See—*
Matschke, Arthur L.; and Horowitz, Jack W., 3,836,880.
Horowitz, Leonard; and Tam, John. Shelving system having wall-mounted fixtures. 3,836,009, Cl. 211-90.000.
Horst, Wilfried; Coldewey, Heiko; Ammazzalorso, Mario; and Schuppler, Emil, to Huppe, Justin, Firma. Electrically operable drive arrangement for venetian blinds. 3,835,911, Cl. 160-168.000.
Horton, Robert A., to Precision Metalsmith, Inc. Methods and materials for treating investment casting patterns. 3,836,372, Cl. 106-38.220.
Hosoe, Kuzuya: *See—*
Matsumoto, Seiichi; Hosoe, Kuzuya; and Mochizuki, Noritaka, 3,836,919.
Hostetter, John L. Clamp and vise. 3,836,137, Cl. 269-167.000.
Hotchkiss, Kenneth W.; and Byers, Gerald S., to Photo Production Plastics, Inc. Covers for terminal boxes. 3,836,826, Cl. 317-122.000.
House, Ralph: *See—*
Danzik, Mitchell; and House, Ralph, 3,836,484.
Houser, David E.: *See—*
Cracraft, Larry F.; Houser, David E.; and Whitaker, Edward G., 3,836,955.
Houser, Phillip H.: *See—*
Burnett, Mackenzie; Brady, Cyrus T.; Duffield, Peter L.; and Houser, Phillip H., 3,836,913.
Houston, Robert K.; and Irving, Donald W., to FMC Corporation. Press for forming one-piece tablet containing seeds or the like. 3,836,299, Cl. 425-128.000.
Howard, Robert. Printer head assembly. 3,835,975, Cl. 197-1.00r.
Howard, Rollen D.: *See—*
Egan, Dale W.; Holstrom, Geoffrey B.; Lord, Harry C.; Stevens, Robert W.; Port, Darrell P.; and Howard, Rollen D., 3,836,237.
Howe, Milton A., Jr.; Dexter, Everett H.; and Thompson, Eugene D. Film sheet dispensing. 3,835,993, Cl. 206-451.00r.
Howell, Harold George, to Black and Decker Manufacturing Company, The. Hammer drill mechanism. 3,835,715, Cl. 74-22.00r.
Hoyles, Ronald; and Mitchell, Stanley Alan, to Lever Brothers Company. Toothpastes. 3,836,641, Cl. 424-49.000.
Hoyt, Richard, to OMCO Inc. Locks. 3,835,674, Cl. 70-34.000.
Hreschak, Bohdan O.: *See—*
Hoos, Joseph W.; and Hreschak, Bohdan O., 3,836,683.
Hrovat, Milan: *See—*
Hackstein, Karl-Gerhard; Hrovat, Milan; and Wolff, Willi, 3,836,311.
Hu, Chin-I. Self protective saddle cover for cycle. 3,836,196, Cl. 297-219.000.
Hu, Paul Y.: *See—*
Guzman, Adolfo M.; Hu, Paul Y.; and Waller, Tracy N., 3,836,774.
Huber, Werner: *See—*
Broemer, Heinz; Huber, Werner; Meinert, Norbert; and Spincic, Johann, 3,836,375.
Hubner, Otto. Hair dryer. 3,836,749, Cl. 219-370.000.
Huffman, Theron, to General Signal Corporation. Multiple speed hydraulic drive circuit. 3,835,647, Cl. 60-486.000.
Hughes Aircraft Company: *See—*
Evans, Norol T., 3,836,964.
Hughes, Alexander W., Jr. Talking alarm clock. 3,835,640, Cl. 58-14.000.
Hughes, Nathaniel, to Energy Sciences Incorporated. Pressure wave mixing. 3,835,810, Cl. 116-137.00a.

Hughes, Thomas L.; and Massey, Peter Graham, to Lucas, Joseph (Electrical) Limited. Spring contact for semi-conductor devices. 3,837,001, Cl. 357-65.000.
Hull, R. Dell. Closed face spinning reel. 3,836,092, Cl. 242-84.20a.
Hull, Roy: *See—*
Barrett, Arthur Michael; Carter, John; Hull, Roy; Le Count, David James; and Squire, Christopher John, 3,836,671.
Humbert, Fred W.: *See—*
Humbert, Wilbur E.; and Humbert, Fred W., 3,835,567.
Humbert, Wilbur E.; and Humbert, Fred W. Troll fishing apparatus. 3,835,567, Cl. 43-6.500.
Hummer, Herbert B., to Durametallic Corporation. Double shaft seal with ball drive key. 3,836,157, Cl. 277-62.000.
Hundstad, Richard L., to Westinghouse Electric Corporation. Vacuum type circuit interrupter having improved contacts. 3,836,740, Cl. 200-144.00b.
Hundt, Eberhard, to Daimler-Benz Aktiengesellschaft. Semitrailer-like motor vehicle with air cushion trailer for transportation of loads. 3,835,951, Cl. 180-119.000.
Hunsicker, Harold Y.: *See—*
Staley, James T.; Hunsicker, Harold Y.; and Brown, Robert H., 3,836,405.
Hunt Brothers (Oldbury) Limited: *See—*
Kidson, Leonard, 3,835,768.
Huppe, Justin, Firma: *See—*
Horst, Wilfried; Coldewey, Heiko; Ammazzalorso, Mario; and Schuppler, Emil, 3,835,911.
Hurtig, Roy E.; and Geri, Don W., to Memorex Corporation. Film cassette. 3,836,091, Cl. 242-71.200.
Hussong-Walker-Davis Co.: *See—*
Leslie, Myron E., 3,835,672.
Huston, Paul O., to Becton Dickinson and Company. Fluid dispensing device. 3,836,079, Cl. 239-74.000.
Hutchison, John Grear, to Grace, W. R., & Co. Process and apparatus for preparing printing plates using a photocured image. 3,836,709, Cl. 178-6.70r.
Huth, R. Carl; and Mc Coy, William, to Johnston, Robert A., Company, Inc. In-line crimping device for rigid foil containers. 3,835,799, Cl. 113-1.00e.
Hutson, Lawrence W. Spinning tool for untwisting phone service cords. 3,836,190, Cl. 294-118.000.
Hutter, Charles G.: *See—*
Grosholz, James R.; Crowley, Charles L.; and Hutter, Charles G., 3,836,287.
HVP, Inc.: *See—*
Duclo, Marley J., 3,835,948.
Hyde, Walter E., to Halliburton Company. Expandable pipeline plug. 3,835,889, Cl. 138-93.000.
Hydril Company: *See—*
Mott, James D., 3,835,925.
I-T-E Imperial Corporation: *See—*
Clausing, Chelliss I., 3,836,819.
Clement, Ralph C., 3,836,936.
Di Marco, Bernard; Kussy, Frank W.; and Cataldo, John B., 3,836,820.
Golota, John H., 3,836,741.
Ichikawa, Kiyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Piano tone-synthesizing system for electronic musical instruments. 3,836,693, Cl. 84-1.190.
Ichikawa, Shigemasa, to Aiphone Kabushiki Kaisha. Intercommunication system with a time limited advance notice signal. 3,836,718, Cl. 179-1.00h.
Ichinose, Noboru; and Yokomizo, Yuji, to Tokyo Shibarua Electric Co., Ltd. Oxide varistor. 3,836,483, Cl. 252-519.000.
ICN Pharmaceuticals, Inc.: *See—*
Tolman, Richard L.; and Sidwell, Robert W., 3,836,645.
IDN Inventions and Development of Novelties AG: *See—*
Kuntze, Gerd, 3,836,222.
Iglesias, Jose J. Endoscope with continuous irrigation. 3,835,842, Cl. 128-7.000.
Iida, Akira: *See—*
Yoshizawa, Masao; Mikami, Takeo; Kobayashi, Nobuo; and Iida, Akira, 3,836,507.
Iijima, Tetsuya: *See—*
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsuya, 3,835,732.
Ikegami, Kazutoshi; Yamamoto, Mitsuoki; Toudo, Kenji; and Miyanaka, Motosi, to Hitachi, Ltd. Flame detecting apparatus. 3,836,316, Cl. 431-79.000.
Ikegami, Kazutoshi; Honda, Juichi; Miyanaka, Motosi; and Yamamoto, Mitsuoki, to Hitachi, Ltd. Flame detector. 3,836,857, Cl. 328-6.000.
Ikegaya, Masashi; and Shigeta, Fumio, to Riken Light Metal Industries, Co., Ltd. Method for forming a colored oxide coating on surfaces of aluminum or aluminum alloy. 3,836,439, Cl. 204-58.000.
Ikushima, Ichiro: *See—*
Maeda, Minoru; and Ikushima, Ichiro, 3,836,874.
Ilardi, Joseph M.; and Rau, Eric, to Intermountain Research and Development Corporation mesne. Crystal growth modifier. 3,836,628, Cl. 432-206.000.
Illinois Tool Works Inc.: *See—*
Bernin, Victor M., 3,836,910.
Koscik, Richard Allen, 3,836,269.
Sygnator, Henry Anton, 3,835,495.
Imperial Chemical Industries Limited: *See—*
Barrett, Arthur Michael; Carter, John; Hull, Roy; Le Count, David James; and Squire, Christopher John, 3,836,671.
Ims, Horst O. H., to Uniroyal, Ltd. Mechanized tread booking apparatus. 3,836,022, Cl. 214-41.000.
Ingersoll-Rand Company: *See—*
Coski, William D., 3,835,933.
Coski, William D., 3,836,271.
Dopkin, Joseph A.; and Hermann, Paul, 3,836,215.
Ingram, Marylou: *See—*
Coulter, Wallace H.; Ingram, Marylou; and Ferro, Patrick Vincent, 3,836,849.
Inmont Corporation: *See—*
Strecker, Larry A.; and Wood, James E., 3,836,695.
Inoue, Keiji: *See—*
Shimizu, Masao; Sakurai, Yasunoeu; Sato, Hideo; and Inoue, Keiji, 3,836,794.
Institut Francais du Petrole des Carburants et Lubrifiants: *See—*
Codet, Georgis; Dawans, Francois; De Charentenay, Francois-Xavier; and Teyssie, Philippe, 3,836,444.
Layotte, Pierre Claude, 3,835,954.
Intermountain Research and Development Corporation mesne: *See—*
Ilardi, Joseph M.; and Rau, Eric, 3,836,628.
International Business Machines Corporation: *See—*
Abbas, Shakir A.; Barile, Conrad A.; Lane, Ralph D.; and Liu, Peter T., 3,836,992.
Cobb, Richard O.; and Lipp, James, 3,835,998.
De Simone, Roy R.; Donofrio, Nicholas M.; Linton, Richard H.; Sonoda, George; and Wade, William T., 3,836,892.
Duke, Keith A.; and Messina, Benedicto U., 3,836,957.
Ghougasian, John; Hart, Jon; Juliusburger, Hans Yohanan; and Lowy, Paul, 3,836,912.
Green, Dennis Clinton; and Young, William Robert, 3,836,478.
Guzman, Adolfo M.; Hu, Paul Y.; and Waller, Tracy N., 3,836,774.
Harris, John P.; Mantey, John P.; and Wood, David R., 3,836,833.
McMurtry, David Harwood, 3,836,958.
Rifkin, Alfred Aaron, 3,836,896.
Struk, James R.; and Werner, Robert G., 3,836,789.
Wiley, John P., 3,836,916.
International Computers Limited: *See—*
Luttmer, Willem, 3,835,531.
International Contacts Inventors Anstalt: *See—*
Rameil, Jean, 3,835,838.
International Flavors & Fragrances Inc.: *See—*
Evers, William J.; Heinsohn, Howard H., Jr.; and Mayers, Bernard J., 3,836,563.
International Nickel Company, Inc., The: *See—*
Forbes Jones, Robin Mackay, 3,836,358.
International Research & Development Company Limited: *See—*
Arthur, George; and Brown, Derek James, 3,835,734.
International Research & Development Company, Ltd.: *See—*
Appleton, Anthony Derek; and Tinlin, Frank, 3,835,663.
International Research and Development Corporation: *See—*
McInnes, Alexander G. P., 3,836,278.
International Standard Electric Corporation: *See—*
Cragg, William Donald, 3,836,733.
Minks, Werner, 3,836,878.
Overbury, Francis Giles, 3,836,978.
International Technidyne Corporation: *See—*
Mintz, Michael D., 3,836,333.
International Telephone and Telegraph Corporation: *See—*
Clark, James M., 3,836,719.
Jezo, Maurice L., 3,836,864.
Levin, Herbert L., 3,836,043.
Milette, Kenneth Arthur; and Uyeda, Tim Minoru, 3,835,479.
Miller, Harlan E., 3,836,728.
InterRoyal Corporation: *See—*
Benoit, Roland A.; and Curran, John, 3,835,486.
Irie, Hiroyuki: *See—*
Meki, Nori; and Irie, Hiroyuki, 3,836,708.
Irmscher, Klaus; Freisberg, Karl-Otto; Orth, Dieter; Nowak, Herbert; and Simane, Zdenek, to Merck Patent Gesellschaft mit beschrankter Haftung. Water-soluble sterol sulfates. 3,836,527, Cl. 260-239.55a.
Irokawa, Hideo: *See—*
Soejima, Shigeo; and Irokawa, Hideo, 3,836,472.
Irrni, Meherwan C., 1/2 to Buell, Eugene F. Methods of treating silicious materials to form silicon carbide. 3,836,356, Cl. 75-33.000.
Irvin Air Chute Ltd.: *See—*
Wilson, Kenneth R. A., 3,836,167.
Irving, Donald W.: *See—*
Houston, Robert K.; and Irving, Donald W., 3,836,299.
Ishammar, Nils Gosta Sigvard. Goods delivery system. 3,836,220, Cl. 312-236.000.
Ishii, Mitsuaki: *See—*
Ueda, Atsushi; and Ishii, Mitsuaki, 3,836,887.
Ishikawa, Masakazu; and Itou, Sadayoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Negative pressure circuit arrangement having a check valve. 3,835,884, Cl. 137-550.000.
Ishikawa, Mitsuo, to Bell & Howell Company. Automatic cassette recorder reproducer. 3,836,154, Cl. 360-92.000.
Itami, Kazuo: *See—*
Yasui, Koichi; Yamamoto, Kazuo; Itami, Kazuo; Fujisawa, Kiyoshi; and Sasaki, Toshio, 3,836,336.
Itaya, Nobushige: *See—*

Higo, Akio; Itaya, Nobushige; Hirai, Hajime; and Yoshioka, Hirosuke, 3,836,568.

Itek Corporation: *See—*
Bowker, John Kent, 3,836,246.
Gracia, Robert F.; Laughrey, Richard A.; and Tuohey, Paul F., 3,835,780.

Ito, Ryosuke; and Takahashi, Susumu, to Sansui Electric Co., Ltd. Decoder for use in 4-2-4 matrix playback system. 3,836,715, Cl. 179-1.0gq.

Ito, Toshio: *See—*
Taketo, Kiyoshi; Ito, Toshio; and Kishimoto, Fikutaro, 3,836,744.

Itou, Sadayoshi: *See—*
Ishikawa, Masakazu; and Itou, Sadayoshi, 3,835,884.

ITT Industries, Inc.: *See—*
Belart, Juan, 3,836,207.
Fries, Hjalmar Elias, 3,836,456.
Seip, Hermann, 3,835,968.
Wienecke, Franz, 3,836,208.

Ivko, Joseph J. Ivko scraper. 3,835,534, Cl. 30-169.000.

Iwatsuki, Masahiro: *See—*
Hayashi, Yoshihiro; and Iwatsuki, Masahiro, 3,836,171.

Izraeli, Hyman, to Thomas & Betts Corporation. Electrical connector with resilient pressure pad. 3,836,941, Cl. 339-95.00r.

Jablonski, Zygmunt: *See—*
Lawson, Ralph Leonard Joseph; and Jablonski, Zygmunt, 3,835,686.

Jackson, Patrick T. Sail furling. 3,835,804, Cl. 114-107.000.

Jacobs, Leonard D.; and Bennett, Robert H., to Circle Milking, Inc. Rotating milking platform. 3,835,814, Cl. 119-14.040.

Jacobs, Richard L.: *See—*
Cooke, Anson R.; Jacobs, Richard L.; and Compton, Ell Dee, 3,836,351.

Jacobus, John J.: *See—*
Clarke, James A.; Jacobus, John J.; and Lager, Eric Peter, 3,836,768.

Jaeck, Frank: *See—*
Wilisch, Jurgen; Goetze, Rudolf; Jaeck, Frank; Nackmayr, Dietrich; Rehberg, Heinz; and Thuy, Hans-Joachim, 3,836,731.

Jaeger, Horst; and Schaefer, Paul. Perfluoroalkyl compounds, their manufacture, their polymerisation products and their use. 3,836,577, Cl. 260-486.00h.

Jago, Edward John; and McCray, Walter A., to Foseco International Limited. Flat folded hot topping assemblies. 3,836,112, Cl. 249-197.000.

Jakubek, Peter, to Fa. International Pollution Control Systems, Inc. Process and apparatus of handling water which is contaminated with an oil like liquid. 3,836,000, Cl. 210-104.000.

James, Gerald E., to Oxford Laboratories. Determination of vanilmandelic acid in urine. 3,836,332, Cl. 23-230.00b.

Jamison, Sauders E.; and Anthony, Gene H., to Celanese Corporation. Method of forming cylindrical foamed cellulose rods enclosed in a rigid skin. 3,836,615, Cl. 264-47.000.

Jaquet, Andre Gustave, to Canron, Inc. Measuring device for checking and/or correcting the transverse slope of railway tracks. 3,835,546, Cl. 33-338.000.

Jaworski, George M.: *See—*
Kent, Francis J.; and Jaworski, George M., 3,835,685.

JCN Wire Industries Ltd.: *See—*
Goddard, Norman H., 3,835,793.

Jebsen, Kristian G.: *See—*
Aralt, Per Tybring, 3,836,019.

Jennings, Donald G. Trailer chock. 3,836,179, Cl. 280-476.000.

Jeppsson, Torsten, AB: *See—*
Andersson, Sven Ingemar, 3,836,067.

Jewett, Warren R., to Jewett-Ashley Holding Corporation, mesne. Catheter advancing device with nip rollers. 3,835,854, Cl. 128-214.400.

Jewett-Ashley Holding Corporation, mesne: *See—*
Jewett, Warren R., 3,835,854.

Jezo, Maurice L., to International Telephone and Telegraph Corporation. Method and apparatus for determining tacan bearing. 3,836,864, Cl. 331-1.00r.

Joannou, Constantinos J. Phonograph record player tone arm assembly. 3,836,155, Cl. 274-23.00r.

Johanns, Johannes Hendricus Maria; De Boer, Thijs Johannes; De Haan, Edward Fokko; Van Gelder, Zeger; and Mattheij, Mathieu Martinus Maria Petrus, to U. S. Philips Corporation. Picture display device comprising a plurality of light producing elements. 3,83,810, Cl. 313-484.000.

Johanson, Donald L.; and Stutz, Rolf, to Audivox, Inc. Hearing and having selectable directional characteristics. 3,836,732, Cl. 179-107.0fd.

Johansson, Anders, to Johansson, Tor. Vehicle lifting device. 3,836,014, Cl. 214-1.00a.

Johansson, Tor: *See—*
Johansson, Anders, 3,836,014.

Johansson, Yngve Lennart: *See—*
Gengard, Sven-Erik Olof; and Johansson, Yngve Lennart, 3,836,214.

John, Robert Sawyer, Jr., to Bell & Howell Company. Optical document sensor for reading machines. 3,836,248, Cl. 355-50.000.

Johnson & Johnson: *See—*
Fechillas, Michael R., 3,836,514.

Johnson, Bobby G. Fiberglass pour-in-place form. 3,835,608, Cl. 52-426.000.

Johnson, Dwight N., to Singer Company, The. Axial flow valve. 3,836,113, Cl. 251-5.000.

Johnson, Frederick W., to Collins Radio Company. Moisture seal for electrical connector. 3,836,935, Cl. 339-17.0lm.

Johnson, Herbert G.; Wright, John B.; Hall, Charles M.; and Warner, Donald T., to Upjohn Company, The. 3-Cyano-2-pyrryl oxamic acids. 3,836,541, Cl. 260-326.200.

Johnson, John K.: *See—*
Earhart, Jack R.; Crocker, James Dennis; and Johnson, John K., 3,836,130.

Johnson, Joseph A., to Jomar Industries, Inc. Multiple injection blow molding machine. 3,836,304, Cl. 425-242.00b.

Johnson, Le Roy A.: *See—*
Ault, Alfred S.; Johnson, Le Roy A.; and Van Dolah, Harry J., 3,836,373.

Johnson, Ralph Ketchum, to Wiebe Manufacturing, Inc. Vacuum assist can unscrambler. 3,835,985, Cl. 198-33.0aa.

Johnson, Robert L.: *See—*
Bhuta, Pravin G.; Johnson, Robert L.; Graham, Douglas J.; and Aprahamian, Robert, 3,836,950.

Johnson, Robert N.; and Karol, Frederick J., to Union Carbide Corporation. Polymerization of ethylene with supported π allyl chromium complexes. 3,836,595, Cl. 260-683.15d.

Johnson, Robert W.: *See—*
Taylor, Victor E.; Choate, Wallace R.; Banachowski, Stanley; Johnson, Robert W.; and Faison, Robert C., 3,835,743.

Johnson, Ronald F., to United States of America, Army. Method and apparatus for rapid subsurface exploration. 3,836,952, Cl. 340-15.5cp.

Johnson Service Company: *See—*
Laakaniemi, Richard N.; and Stahl, Robert R., 3,835,876.

Johnson, Will A.: *See—*
Franks, Aud J.; and Johnson, Will A., 3,835,797.

Johnston, Mack S. Liquid dispensing apparatus. 3,836,053, Cl. 222-400.700.

Johnston, Robert A., Company, Inc.: *See—*
Huth, R. Carl; and Mc Coy, William, 3,835,799.

Jomar Industries, Inc.: *See—*
Johnson, Joseph A., 3,836,304.

Joneaux, Pierre Andre. Weapon launching rockets and method to use the same. 3,835,749, Cl. 89-1.008.

Jones, Cecil Roy, to Transfer Systems Incorporated. Motor-driven hoist with protective braking system. 3,836,121, Cl. 254-170.00r.

Jones, Elwyn David, to Canadian Industries Limited. Bag tie dispenser. 3,835,755, Cl. 93-8.0wa.

Jones, Frederick W. C., to Oxy Metal Finishing Corporation, mesne. Cold metal forming lubricant. 3,836,467, Cl. 252-18.000.

Jones, John, Jr.: *See—*
Duhy, Kenneth W.; and Jones, John, Jr., 3,836,045.

Jones, William Arthur; and Burge, Maurice Victor. Chenodeoxycholic acid. 3,836,550, Cl. 260-397.100.

Jonsson, Karl-Erik A. Tree felling device. 3,835,901, Cl. 144-34.00r.

Jordan, Michael, to Damon Corporation. Method and apparatus for removing liquid from containers. 3,836,329, Cl. 23-230.00r.

Jorgensen, Bjarne. Method of manufacturing a fitting using a punch and die. 3,835,518, Cl. 29-150.000.

Joshi, Vishnuprakash, to Licentia Patent-Verwaltungs-GmbH. Magnetic field dependent field effect transistor. 3,836,993, Cl. 357-27.000.

Joy Manufacturing Company: *See—*
Moody, David L.; and Loftis, James B., 3,835,938.

Judd, Claude I.: *See—*
Drukker, Alexander E.; and Judd, Claude I., 3,836,534.

Juliusburger, Hans Yohanan: *See—*
Ghougasian, John; Hart, Jon; Juliusburger, Hans Yohanan; and Lowy, Paul, 3,836,912.

Jun, Mong-Jon; Penzien, Klaus; and Wegner, Gerhard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Photopolymerizable element comprising a conjugated diacetylene layer on the photopolymer layer. 3,836,368, Cl. 96-69.000.

Junker, Arnold E., to Avco Corporation. Pressure balanced seal assembly. 3,836,216, Cl. 308-187.100.

Junkunc Bros. American Lock Company: *See—*
Lippisch, Guillermo W., 3,835,675.

Juno, Detlef: *See—*
Singewald, Arno; Fricke, Gunter; and Juno, Detlef, 3,835,996.

Justice, James W. H., to Westinghouse Electric Corporation. Video tape recording of line-shared TV signals. 3,837,003, Cl. 358-4.000.

Kabushiki Kaisha Ricoh: *See—*
Kusano, Haruo; and Takeuchi, Norisada, 3,836,981.

Kabushiki Kaisha Suwa Seikosha: *See—*
Shimodaira, Tadayoshi; and Gomi, Yoshifumi, 3,835,770.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Hayashi, Yoshihiro; and Iwatsuki, Masahiro, 3,836,171.

Kaga, Toshio: *See—*
Shimizu, Junichi; and Kaga, Toshio, 3,836,432.

Kahle, Rolf D.: *See—*
Seitz, Paul N.; Cox, Gerald C.; and Kahle, Rolf D., 3,836,926.

Kahn, William J.: *See—*
Wells, Joel D.; Sabin, Albert S.; Kahn, William J.; and Wigner, William K., 3,836,726.

Kaiser Aluminum & Chemical Corporation: *See—*

Mann, Larry L., 3,836,612.
Kajimoto, Tsunesuke; and Wakamatsu, Shigeru, to Toray Industries, Inc. Catalyst composition of ethylene to ethylene oxide. 3,836,481, Cl. 252-462.000.
Kali and Salz AG: *See*—
Singewald, Arno; Fricke, Gunter; and Juno, Detlef, 3,835,996.
Kali Und Salz Aktiengesellschaft: *See*—
Wiensz, Klaus; and Bischoff, Friedrich, 3,836,627.
Kali-Chemie Aktiengesellschaft: *See*—
Paucksch, Heinrich; Massonne, Joachim; and Derleth, Helmuth, 3,836,479.
Kanai, Toshio: *See*—
Noguchi, Masaaki; Yanagioka, Hiroshi; Kanai, Toshio; Nishiguchi, Kazuo; Hashimoto, Hideo; Abe, Katuhiro; Masuko, Tomio; Mahino, Zenichi; and Kogawa, Yosio, 3,836,630.
Kaneko, Kazuko. Freeze-drying process for producing a dry plant. 3,835,550, Cl. 34-5.000.
Kanetake, Thomas T.: *See*—
Pao, John; Wang, Raymond; Takashima, Ben Tsutomu; Pon, Chuck Y.; and Kanetake, Thomas T., 3,836,959.
Kanjo, Wajih, to Cardwell Westinghouse Company. Cushioned bumper for scrapers. 3,836,180, Cl. 280-481.000.
Kanner, Bernard: *See*—
Prokai, Bela; and Kanner, Bernard, 3,836,560.
Kansai Paint Co., Ltd.: *See*—
Watanabe, Tadashi; Murata, Kouichiro; and Tsubouchi, Kenjiro, 3,836,492.
Kanter, Yale C.; and Nemer, Bruce A. Compression opthalmodynamometer. 3,835,836, Cl. 128-2.00t.
Kao Soap Co., Ltd.: *See*—
Matsuda, Kazuo; Tanaka, Yoshiaki; and Aritaki, Hirakazu, 3,836,493.
Kapell, Henry K. Re-enterable splice enclosure. 3,836,694, Cl. 174-22.000.
Kapilow, Marvin. Disposable mechanical pencil assembly. 3,836,265, Cl. 401-80.000.
Karamian, Narbik A. Separatory funnel. 3,836,334, Cl. 23-259.000.
Karden, Karl Gosta: *See*—
Gustavsson, Tommy Henning Bruno; Karden, Karl Gosta; and Westerberg, Sven Peter Jonas, 3,836,752.
Karelin, Alexei Kuzmich: *See*—
Ulyanov, Lev Petrovich; and Karelin, Alexei Kuzmich, 3,836,260.
Karman, Harvey. Medical instruments. 3,835,843, Cl. 128-17.000.
Karol, Frederick J.: *See*—
Johnson, Robert N.; and Karol, Frederick J., 3,836,595.
Kartridge Pak Co., The: *See*—
Leonard, George E., 3,835,898.
Kasano, Hiroyuki, to Hitachi, Ltd. Production of epitaxial films of semiconductor compound material. 3,836,408, Cl. 148-175.000.
Kashiwara, Hideo: *See*—
Miyake, Yuji; Kashiwara, Hideo; and Mizukawa, Jun, 3,835,626.
Kasper, Werner: *See*—
Matthias, Guenther; Schulz, Gerhard; Kasper, Werner; and Feind, Klaus, 3,836,583.
Kataoka, Shoei; Hashizume, Nobuo; Tomizawa, Kazutaka; Morisue, Mititada; and Komamiya, Yasuo, to Agency of Industrial Science & Technology. Bulk semiconductor device. 3,836,989, Cl. 357-3.000.
Kato, Kunihiro: *See*—
Nakamura, Shoji; Matsufuji, Akira; Tokushige, Masahiro; and Kato, Kunihiro, 3,836,325.
Kato, Mikio. Bathtub or the like drain control and overflow regulator. 3,835,484, Cl. 4-199.000.
Katz, Louis N. Filtration and circulation system and apparatus therefore. 3,835,813, Cl. 119-5.000.
Katzmark, Peter C.; and Lenea, George H. Granule dispensing regulator. 3,836,055, Cl. 222-427.000.
Kaukeinen, Ralph M., to Corning Glass Works. Face plate ring assembly for an extrusion die. 3,836,302, Cl. 425-197.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Miyashita, Junichi, 3,836,098.
Kawasaki Jukogyo Kabushiki Kasha: *See*—
Terai, Kiyoshi; and Masumoto, Isao, 3,836,748.
Kawasaki, Masahiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Flash control systems for cameras. 3,836,924, Cl. 354-33.000.
Kawasaki Steel Corporation: *See*—
Ueno, Chozaburo, 3,835,605.
Kawashima, Kohei: *See*—
Nakanishi, Hajime; and Kawashima, Kohei, 3,835,636.
Kawazoe, Michio. Tripod for camera. 3,836,986, Cl. 354-293.000.
Kay, Christopher John; and Horbury, Eric Anthony, to Rolls-Royce (1971) Limited. Etching solution. 3,836,473, Cl. 252-79.200.
Kay-Brunner Steel Products, Inc.: *See*—
Behnke, Arnold F., 3,836,268.
Kazewych, Bohdan: *See*—
Meyer, Barthold F.; Dully, Floyd I.; Gergoe, Bela; Kazewych, Bohdan; and Hebert, Robert M., 3,835,678.
Kearney, Robert L.: *See*—
Bookless, George W.; Hertel, Heinz E.; and Kearney, Robert L., 3,836,250.
Hertel, Heinz E.; Kearney, Robert L.; and Weber, Paul E., 3,836,251.
Keces, Mervyn L. Tarrson Company Bottle sand toy. 3,835,580, Cl. 46-11.000.
Keegan, Patrick J.; and Roberts, Carl J., to Cassette Sciences Corp. Flying spot scanning system. 3,836,706, Cl. 178-5.20d.
Kees, George, Jr.; and Hickmann, Horst R., to Kees Surgical Specialty Company. Surgical head clamp. 3,835,861, Cl. 128-346.000.
Kees Surgical Specialty Company: *See*—
Kees, George, Jr.; and Hickmann, Horst R., 3,835,861.
Keimpema, Keimpe Klaas; Van der Veen, Marcus Fokke; Rietveld, Andreas Fredericus; and Schoo, Jan Andreas, to U.S. Philips Corporation. Hair drying hood. 3,835,551, Cl. 34-100.000.
Kelbish, Edward D. Modular construction system. 3,835,601, Cl. 52-79.000.
Kelch, Heinz; and Mueller, Helmut, to Kienzle Apparate GmbH. Damped transfer arrangement for a counter. 3,836,072, Cl. 235-133.00r.
Keller, Robert C., to General Motors Corporation. Double wall exhaust pipe. 3,835,892, Cl. 138-178.000.
Keller, Walter; and Zaehner, Hans, to Ciba-Geigy Corporation. Granaticin B and method of preparing same. 3,836,642, Cl. 424-121.000.
Kelley, Arnetta B.; and Poe, Harvey C. Renewable bait and tackle container. 3,835,575, Cl. 43-56.000.
Kelley, William E., to Aquarium Systems, Inc. Device for measuring specific gravity of liquids. 3,835,711, Cl. 73-444.000.
Kellum, Jerome B.; and Smith, Bill, to Continental Oil Company. Internally mounting pipe beveling machine. 3,835,738, Cl. 82-4.00c.
Kelly, Robert C., to Upjohn Company, The. Novel tetrahydropyranyl lactol derivatives. 3,836,530, Cl. 260-240.00r.
Kelsey-Hayes Company: *See*—
Kerr, Richard H., 3,835,967.
Kelver, Donn E. Cleat for joining duct work. 3,836,181, Cl. 285-55.000.
Kempermann, Theo: *See*—
Roos, Ernst; Abele, Manfred; Nast, Roland; Kempermann, Theo; and Schubart, Rudiger, 3,836,562.
Kendall Company, The: *See*—
Villari, Frank K., 3,835,862.
Kennedy, Harvey J. Lock mechanism for freight car doors. 3,836,186, Cl. 292-189.000.
Kennedy, Paul G., to Westinghouse Electric Corporation. Scan conversion with magnetic drum or disc. 3,837,004, Cl. 358-11.000.
Kenney, Harold E.; Donahue, Edward T.; and Maerker, Gerhard, to United States of America, Agriculture. Greases thickened with keto fatty acid lithium soaps or keto cyanoethylated fatty acid lithium soaps. 3,836,468, Cl. 252-33.600.
Kensler, Daniel L., Jr.; and Walgenbach, David D., to Chevron Research Company. Preservative composition for moist grain. 3,836,655, Cl. 424-286.000.
Kent, Allan R.: *See*—
Kotok, Alan; Kent, Allan R.; and Gross, David A., 3,836,889.
Kent, Francis J.; and Jaworski, George M., to Wean United, Inc. Container cooling system for presses. 3,835,685, Cl. 72-263.000.
Keough, Patricia Tarpey: *See*—
Grayson, Martin; and Keough, Patricia Tarpey, 3,836,587.
Kerr Glass Manufacturing Corporation: *See*—
Roy, Gerald L., 3,836,386.
Kerr, Richard H., to Kelsey-Hayes Company. Torque limiter. 3,835,967, Cl. 188-134.000.
Kerr-McGee Chemical Corporation: *See*—
Baldwin, Roger A.; Bowerman, Paul D.; and Lucid, Michael F., 3,836,476.
Kerrigan, Charles M.: *See*—
Leidy, Harold T.; Kerrigan, Charles M.; and Byble, Duane C., 3,836,678.
Kersten, Gunter; Muller, Rudi; and Ray, Franz. Longitudinal automatic lathe. 3,835,515, Cl. 29-27.00c.
Keur, Robert I.: *See*—
Dal, Henry A.; and Keur, Robert I., 3,835,881.
Keystone Industries, Inc.: *See*—
Hawthorne, Vaughn T., 3,836,013.
Kidson, Leonard, to Hunt Brothers (Oldbury) Limited. Can crushers. 3,835,768, Cl. 100-94.000.
Kienzle Apparate GmbH: *See*—
Kelch, Heinz; and Mueller, Helmut, 3,836,072.
Kilby, Jack S., to Texas Instruments, Incorporated. Method of making semiconductor devices. 3,835,530, Cl. 29-574.000.
Kim, Dong H.: *See*—
Santilli, Arthur A.; Kim, Dong H.; and Fieber, Richard A., 3,836,529.
Santilli, Arthur A.; Scotese, Anthony C.; and Kim, Dong H., 3,836,532.
Kim, Dong H.; and Santilli, Arthur A., to American Home Products Corporation. 10-Hydroxy-2-phenyl-5H-pyrido(1,2-alpha) pyrimido(4,5-d)-pyrimidin-5-one and processes thereto. 3,836,533, Cl. 260-256.40f.
Kimura, Kazuyoshi: *See*—
Yano, Nubumitsu; Fukushima, Masao; Fukinbara, Itaru; Kishi, Masanori; and Kimura, Kazuyoshi, 3,836,531.
Kincl, Fred A.: *See*—
Rudel, Harry W.; and Kincl, Fred A., 3,836,651.
King, John O., Jr. Method of fabricating a joint. 3,835,525, Cl. 29-412.000.
King, John O., Jr. Fastener joint construction. 3,835,615, Cl. 52-758.00d.
King, John O., Jr. Apparatus and method for sizing holes. 3,835,688, Cl. 72-370.000.
King, Junior Keith. Hole drilling apparatus with dirt receiving and storing means. 3,835,941, Cl. 175-88.000.

King, Kenneth K.; and White, Robert L., to General Motors Corporation. Double cardan universal joint with improved centering means. 3,835,667, Cl. 64-17.00r.

King, Richard J.: *See*—
Anderson, Lloyd L.; and King, Richard J., 3,835,585.

Kinoshita, Yoshio; and Akamatsu, Mitsuhiro, to Glory Kogyo Kabushiki Kaisha. Rental locker system. 3,836,945, Cl. 339-119.00r.

Kiritani, Masataka; Matsukawa, Hiroharu; and Aoki, Masayuki, to Fuji Photo Film Co., Ltd. Pressure sensitive recording paper. 3,836,383, Cl. 117-36.200.

Kirk, Russell F.; Moreno, Frederick E.; and Foster, Jack D., to GTE Sylvania Incorporated. Mirror mount for high power lasers. 3,836,236, Cl. 350-310.000.

Kirner, Uwe, to Badische Anilin-& Soda-Fabrik Aktiengesellschaft. Aqueous chlorite bleach containing a hydroxylammonium activator. 3,836,475, Cl. 252-187.00r.

Kirsch, Aloys; Fuchs, Otto; and Spietschka, Ernst, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Quinacridone pigment mixtures and process for preparing them. 3,836,379, Cl. 106-288.00q.

Kirschner, Gerald D.; and Woessner, William H., to Goodyear Tire and Rubber Company, The. Switching apparatus for transportation system. 3,835,785, Cl. 104-130.000.

Kirton, Joseph Mason; and Southwick, J. Wanless, to Research Enterprises, Inc. Apparatus for teaching. 3,835,553, Cl. 35-9.00c.

Kishi, Masanori: *See*—
Yano, Nubumitsu; Fukushima, Masao; Fukinbara, Itaru; Kishi, Masanori; and Kimura, Kazuyoshi, 3,836,531.

Kishida, Takashi; and Terano, Masateru, to Teijin Limited. Draw-texturing apparatus. 3,835,632, Cl. 57-34.0hs.

Kishimoto, Fikutaro: *See*—
Taketo, Kiyoshi; Ito, Toshio; and Kishimoto, Fikutaro, 3,836,744.

Kishira, Nozumu, to Yamaha Hatsudoki Kabushiki Kaisha. Intake silencer for an internal combustion engine. 3,835,956, Cl. 181-35.00a.

Kitano, Akira, to Nippondenso Co., Ltd. Pulse width setting apparatus. 3,836,858, Cl. 328-58.000.

Kitchel, George Behrman. Faceted gem with embedded means for producing variable pattern. 3,835,665, Cl. 63-32.000.

Klee, John Michael: *See*—
Findlay, Peter Michael; Savage, Sidney Clifford; Klee, John Michael; and Gamble, Joseph Eric, 3,835,669.

Klees, Gerard T., to General Motors Corporation. Vehicle bumper system. 3,836,188, Cl. 293-88.000.

Klein, Konrad, to Zinser-Textilmaschinen GmbH. Gripper for yarn carriers and the like. 3,835,633, Cl. 57-52.000.

Klein, Wilhelm, to USM Corporation. Method and machine for shaping the heel of a shoe upper. 3,835,496, Cl. 12-142.00r.

Kleinman, Leonard; and Zelenko, Harry. Electric lamp with balloon dome. 3,836,761, Cl. 240-10.00c.

Klem, Franklin D.: *See*—
Gross, Marvin C.; Stana, Regis R.; Klem, Franklin D.; and Shaffer, Raymond E., 3,836,457.

Klemm, Martin, to Fritz Buser AG., Maschinenfabrik. Method for photo-mechanical composition of designs on stencils for film and screen printing, particularly rotary screen printing. 3,836,367, Cl. 96-36.400.

Klep Corporation: *See*—
Klepper, Constant L.; and Koziel, Ronald, 3,836,138.

Klepper, Constant L.; and Koziel, Ronald, to Klep Corporation. Web folding machine. 3,836,138, Cl. 270-79.000.

Klicki, Chester E., to Lear Siegler, Inc. Box spring assembly. 3,835,485, Cl. 5-247.000.

Klimstra, Paul D., to Searle, G. D., & Co. Method of inhibiting the growth of larvae and nymphs with azasteroids. 3,836,629, Cl. 424-238.000.

Kline, Richard L., to American Air Filter Company, Inc. Electrode support apparatus for electrical precipitators. 3,835,623, Cl. 55-148.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Wildpaner, Hubert, 3,835,873.

Kluver, Dennis A.; and Mehl, Donald N., to Northwest Microfilm, Inc. Micro fiche mounting carriage for film reader. 3,836,242, Cl. 353-27.000.

Kmecak, Ronald A.: *See*—
Kovach, Stephen M.; Patrick, Ralph E.; and Kmecak, Ronald A., 3,836,453.

Knabenbauer, Wolfgang: *See*—
Niklas, Hans; Knabenbauer, Wolfgang; and Rabenstein, Heinrich, 3,836,401.

Knapp, Heinrich, to Bosch, Robert, GmbH. Fuel supply system. 3,835,828, Cl. 123-119.00r.

Knapsack Aktiengesellschaft: *See*—
Hartlapp, Gerhard; Haas, Hans; and Stendenbach, Karl-Heinz, 3,836,675.

Knauer, Kuno: *See*—
Butter, Karl; and Knauer, Kuno, 3,835,644.

Knavish, Leonard A., to PPG Industries, Inc. Method of making glass. 3,836,349, Cl. 65-134.000.

Knickerbocker, Robert H. Separable electrical connector. 3,836,942, Cl. 339-97.00r.

Knowles, Richard Norris, to Du Pont de Nemours, E. I., and Company. Salts of antimony (V) esters as flame retardants. 3,836,557, Cl. 260-446.000.

Kobashi, Toshiyuki; and Abe, Noboru, to American Cynamid Company. Method of producing fibers having porous structures. 3,836,616, Cl. 264-50.000.

Kobayakawa, Masaki; Yawata, Kazufumi; and Yamashita, Shigeru, to Nippon Electric Kagoshima, Limited. Luminescence display tube base plate comprising protrusions extended sideways beyond grid supports. 3,836,806, Cl. 313-108.00r.

Kobayashi, Hiroshi; and Okada, Goro, to Babcock-Hitachi. Clinker cooling equipment and method. 3,836,321, Cl. 432-15.000.

Kobayashi, Nobuo: *See*—
Yoshizawa, Masao; Mikami, Takeo; Kobayashi, Nobuo; and Iida, Akira, 3,836,507.

Koch, Fenton C., to High Temperature Systems, Inc. Molten metal pumps. 3,836,280, Cl. 415-175.000.

Kochendorfer, Donald P.; and Whistler, Charles C., Jr., to General Motors Corporation. Automatic ice maker water line with meniscus control. 3,835,661, Cl. 62-340.000.

Kochta, Zdenek: *See*—
Piller, Bohumil; Lacko, Vladimir; Kochta, Zdenek; and Koudelka, Bedrich, 3,835,512.

Kocsis, Joseph; and Polata, Bohumil, to Signetics Corporation. High voltage bipolar semiconductor device and integrated circuit using the same and method. 3,836,998, Cl. 357-53.000.

Kodama, Mikio, to Fuji Spinning Company Limited. Yarn winding apparatus and method. 3,836,086, Cl. 242-35.50r.

Koehler, Helmut A.; Redhead, David L.; and Clough, George A., to United States of America, Atomic Energy Commission. Pyrotechnically excited laser system. 3,836,865, Cl. 331-94.50p.

Koelling, Georg: *See*—
Romey, Ingo; and Koelling, Georg, 3,836,343.

Kogawa, Yosio: *See*—
Noguchi, Masaaki; Yanagioka, Hiroshi; Kanai, Toshio; Nishiguchi, Kazuo; Hashimoto, Hideo; Abe, Katuhiro; Masuko, Tomio; Mahino, Zenichi; and Kogawa, Yosio, 3,836,630.

Koh-I-Noor Rapidograph, Inc., mesne: *See*—
Lorenz, Ewald; Schlink, Wilhelm; Kunzler, Bruno; and Goltermann, Klaus-Dieter, 3,836,266.

Kohner Bros., Inc.: *See*—
Stubbmann, Albert, 3,835,582.

Koizumi, Ken: *See*—
Ono, Seiichi; Koizumi, Ken; and Yoshiyagawa, Mitsugi, 3,836,347.
Sumimoto, Toru; Matsushita, Shigeo; Fujiware, Tadafumi; Koizumi, Ken; and Yamazaki, Tetsuya, 3,836,348.

Koizumi, Yasumi, to Alps Electric Co., Ltd. Double-tuned circuit device with adjustable coupling coefficient means. 3,836,881, Cl. 336-87.000.

Kok, Pieter W., to North American Philips Corporation. Rotating anode X-ray tube. 3,836,805, Cl. 314-60.000.

Kokoszka, John G., to Dow Corning Corporation. Polish ingredient. 3,836,371, Cl. 106-10.000.

Koleff, Boris; and Nagel, Erich, to AGFA-Gevaert Aktiengesellschaft. Apparatus for braking and arresting indexible carriers for filters or the like. 3,836,928, Cl. 354-100.000.

Koliss, Peter Paul: *See*—
Gressitt, Tillman Johnson; Koliss, Peter Paul; and Ramsey, Raymond Bolton, 3,836,696.

Kolycheck, Edmond G., to Goodrich, B. F., Company, The. Diisocyanate-organometallic catalyst solutions. 3,836,555, Cl. 252-431.00n.

Komakine, Chukei. Feedstuff for fowl, fish and domestic animals. 3,836,676, Cl. 426-74.000.

Komamiya, Yasuo: *See*—
Kataoka, Shoei; Hashizume, Nobuo; Tomizawa, Kazutaka; Morisue, Mititada; and Komamiya, Yasuo, 3,836,989.

Konagamitsu, George K.: *See*—
Hertel, Heinz E.; and Konagamitsu, George K., 3,836,984.

Kondrot, Leonard V.: *See*—
Freck, James A.; and Kondrot, Leonard V., 3,836,677.

Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Zeile, Karl; Engelhardt, Albrecht; and Traunecker, Werner, to Boehringer Ingelheim G.m.b.H. Pharmaceutical compositions containing certain 1-(cyanophenoxy)-2-hydroxy-3-(cycoalkyl-amino)-propanes and method o use. 3,836,666, Cl. 424-304.000.

Koppers Company, Inc.: *See*—
Baum, Melvin E., 3,836,606.

Kornreich, Philipp G.; and Kowel, Stephen T. Direct electronic fourier transforms of optical images. 3,836,712, Cl. 178-7.100.

Korth, William P. Silencer. 3,836,097, Cl. 244-1.00n.

Korzeb, Frank: *See*—
Shaefer, Frederick C.; Korzeb, Frank; and Bayly, William I., 3,836,324.

Koscik, Richard Allen, to Illinois Tool Works Inc. Cable sealing grommet. 3,836,269, Cl. 403-197.000.

Koskulitz, Joseph Allen: *See*—
Hall, William Bernard; and Koskulitz, Joseph Allen, 3,836,825.

Koslowski, Manfred Gunter, to Du Pont de Nemours, E. I., and Company. Baffle for texturing jet. 3,835,510, Cl. 28-1.400.

Kotok, Alan; Kent, Allan R.; and Gross, David A., to Digital Equipment Corporation. Priority interruption circuits for digital computer systems. 3,836,889, Cl. 340-172.500.

Kotter, Gustav. Machine for ironing trousers. 3,835,559, Cl. 38-21.000.

Kotter, James L.: *See*—

Mayer, Mayer, Jr.; Kotter, James I.; Salaun, Harold L., Jr.; and Brown, Roger S., 3,835,638.

Koudelka, Bedrich: *See—*
Piller, Bohumil; Lacko, Vladimir; Kochta, Zdenek; and Koudelka, Bedrich, 3,835,512.

Kovach, Stephen M.; Patrick, Ralph E.; and Kmecak, Ronald A., to Ashland Oil, Inc. Process for hydrogenation-hydrotreating of hydrocarbon mixtures. 3,836,453, Cl. 208-143.000.

Kowel, Stephen T.: *See—*
Kornreich, Philipp G.; and Kowel, Stephen T., 3,836,712.

Koziel, Ronald: *See—*
Klepper, Constant L.; and Koziel, Ronald, 3,836,138.

Kozuka, Hirotsugu: *See—*
Akiyama, Seikichi; Kozuka, Hirotsugu; and Megumi, Koichi, 3,836,632.

Kraftwerk Union Aktiengesellschaft: *See—*
Lambrecht, Dietrich; and Weghaupt, Erich, 3,835,919.
Schonfeld, Peter; Borgmann, Heinz; and Plohn, Gerhard, 3,836,822.

Krah, Robert: *See—*
Heuschen, Alexander; Schaefer, Hans; Budich, Wolfgang; Krah, Robert; and Obermeier, Karl, 3,836,274.

Kramer, David W., to Smith, A. O., Corporation. Dual coating for protecting metal surface during heat treatment. 3,836,380, Cl. 117-6.000.

Kraus, Charles E., to Excelermatic, Inc. Internal clutch. 3,835,974, Cl. 192-87.150.

Kraus, Peter: *See—*
Helmcke, Conrad; Hermann, Walter; and Kraus, Peter, 3,836,770.

Krause, Friedrich: *See—*
Fischer, Wilhelm; Krause, Friedrich; Biesner, Walter; and Sonnenmoser, Hubert, 3,836,688.

Krawitz, Leonard; Maslyk, Frank J.; and Patterson, Leland W. Process and system for the production of substitute pipeline gas. 3,836,344, Cl. 48-211.000.

Krekeler, Hans; Fernholtz, Hans; Freudenberger, Dieter; Schmidt, Hans-Joachim; and Wunder, Friedrich, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the continuous preparation of unsaturated nitriles. 3,836,567, Cl. 20-465.900.

Kreyenberg, Artur, to Bockemuehl, Johannes. Arrangement for metered flow of liquids. 3,835,885, Cl. 137-551.000.

Kriechbaum, Gerhard K.: *See—*
O'Neill, Edward T.; Brennan, William M.; and Kriechbaum, Gerhard K., 3,836,099.

Kristensen, Paul A.; and Simon, William F., to S. K. S. Limited. Method of joining a filament to a metal rod. 3,835,912, Cl. 163-5.000.

Krohn, Duane D., to Binks Manufacturing Company. Trigger assembly for a spray gun. 3,836,082, Cl. 239-526.000.

Kromer, Theodore KG: *See—*
Heinemann, Albert; and Opferkuch, Wilhelm, 3,835,679.

Kruhn, Jurgen, to Licentia Patent-Verwaltungs-G.m.b.H. Arrangement for automatically gripping and winding up a recording tape. 3,836,095, Cl. 242-195.000.

Krygeris, Algirdas J., to Harris-Intertype Corporation. Ink density control system. 3,835,777, Cl. 101-350.000.

Kubinyi, Hugo. Pharmaceutical composition essentially containing and method of treatment with delta 4,20,22-bufatrienolide rhammoside ethers. 3,836,646, Cl. 424-182.000.

Kubota, Satoru; and Morikawa, Yuji, to Mitsubishi Jukogyo Kabushiki Kaisha. Device for detecting a bend angle upon precisely bending a metallic pipe. 3,835,687, Cl. 72-369.000.

Kuderna, Jerome G., Jr.: *See—*
Smith, Ronald S.; Kuderna, Jerome G., Jr.; and Potter, Richard C., 3,836,638.

Kueny, Don F. Shallow water drive link control. 3,835,807, Cl. 115-41.00r.

Kufner Textilwerke KG: *See—*
Hefele, Josef, Dr., 3,835,555.

Kugler, Tibor; and Rieger, Hans Wolfhart, to Swiss Aluminium Ltd. Method of manufacture of a conductor rail. 3,836,394, Cl. 117-217.000.

Kuhling, Dieter, to Henkel & Cie GmbH. Oxidative treatment of human hair with an acylated glycoluril and an oxidizer. 3,836,636, Cl. 424-62.000.

Kuhn, Falk: *See—*
Schiebel, Alfred; Kuhn, Falk; Beuter, Hermann; and Planck, Alfred, Jr., 3,835,668.

Kummer, Werner: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Zeile, Karl; Engelhardt, Albrecht; and Traunecker, Werner, 3,836,666.

Kunikyo, Tomoo: *See—*
Okuda, Nobuo; and Kunikyo, Tomoo, 3,836,902.

Kunststoff-Verfahrenstechnik Ernst, Dr. Ing., GmbH: *See—*
Ernst, Rudolf, 3,836,298.

Kuntze, Gerd, to IDN Inventions and Development of Novelties AG. Cassette drawer unit with latch. 3,836,222, Cl. 312-319.000.

Kunzler, Bruno: *See—*
Lorenz, Ewald; Schlink, Wilhelm; Kunzler, Bruno; and Goltermann, Klaus-Dieter, 3,836,266.

Kurland, Richard M.; and Fruktow, Gelb N., to TRW Inc. Lightweight deployable helical antenna. 3,836,979, Cl. 343-881.000.

Kurtz, Curtis E., to Borg-Warner Corporation. Easily disassembled and cleanable hydrotherapy pump. 3,835,846, Cl. 128-66.000.

Kusano, Haruo; and Takeuchi, Norisada, to Kabushiki Kaisha Ricoh. Multiple needle electrode device for electrostatic recording. 3,836,981, Cl. 346-74.0es.

Kussy, Frank W.: *See—*
Di Marco, Bernard; Kussy, Frank W.; and Cataldo, John B., 3,836,820.

Kwan, Sai Kheong. Anti-skyjack device. 3,835,673, Cl. 70-14.000.

La Salle Machine Tool, Inc.: *See—*
Trees, James C., 3,835,739.

Laakaniemi, Richard N.; and Stahl, Robert R., to Johnson Service Company. Fluid signal limiting device. 3,835,876, Cl. 137-82.000.

Laboratories Ferrer S. L.: *See—*
Batlles, Jorge Ferrer; Salat, Carlos Ferrar; and Riera, Juan Colome, 3,836,668.

Lacko, Vladimir: *See—*
Piller, Bohumil; Lacko, Vladimir; Kochta, Zdenek; and Koudelka, Bedrich, 3,835,512.

LaFontaine, Ivan: *See—*
Flipot, Alfred-Jean; Papeleux, Paul; and LaFontaine, Ivan, 3,836,431.

Lagace, James R.; and Sherman, Nelson D. Universal cone extractor. 3,835,489, Cl. 7-1.00r.

Lager, Eric Peter: *See—*
Clarke, James A.; Jacobus, John J.; and Lager, Eric Peter, 3,836,768.

Lagerstedt, John Arne; and Persson, Jan Edvard, to Atlas Copco Aktiebolag. Drilling machine suspension. 3,835,936, Cl. 173-162.000.

Lagos, Costas C., to GTE Sylvania Incorporated. Strontium aliminate phosphor activated by cerium and manganese. 3,836,477, Cl. 252-301.40f.

Laithwaite, Eric Roberts: *See—*
Eastham, John Frederick; and Laithwaite, Eric Roberts, 3,836,799.

Lake, Ivan James Samuel: *See—*
Sampson, Roy John; and Lake, Ivan James Samuel, 3,836,594.

Lake Shore Electric Corporation: *See—*
Soos, Steven W., 3,836,742.

Lambrecht, Dietrich; and Weghaupt, Erich, to Kraftwerk Union Aktiengesellschaft. Device for cooling electric machines, particularly turbogenerators. 3,835,919, Cl. 165-47.000.

Lamden, Ralph James, to Ultra Electronics Limited. Capacitive computer circuits. 3,836,893, Cl. 340-173.0ca.

Lamm, Heinz, to Daimler-Benz Aktiengesellschaft. Rotary piston internal combustion engine of trochoidal construction. 3,836,293, Cl. 418-83.000.

Lampson, Neil F., to Riggers Manufacturing Company. Counterbalanced crane structure. 3,836,010, Cl. 212-49.000.

Lane, Ralph D.: *See—*
Abbas, Shakir A.; Barile, Conrad A.; Lane, Ralph D.; and Liu, Peter T., 3,836,992.

Lang, Friedrich, to Lang Weyland GmbH. Apparatus for stretching the spine. 3,835,844, Cl. 128-33.000.

Lang Weyland GmbH: *See—*
Lang, Friedrich, 3,835,844.

Lange, Karl-Heinz, to Balda-Werke Photographische Gerate Und Kunststoff GmbH & Co. KG. Miniature camera with front wall cover. 3,836,985, Cl. 354-287.000.

Lange, Paul M., to Dow Corning Corporation. Wash-resistant skin preparation. 3,836,647, Cl. 424-184.000.

Langsenkamp, F. H., Company: *See—*
Prosser, Walter L., 3,835,763.

Lankford, Benson E. Sportsman's hood seat. 3,835,471, Cl. 2-84.000.

Lankheet, Jay A. Process of producing a foamed polystypene resin molded product. 3,836,617, Cl. 264-51.000.

Larsen, Arthur Lee, to Marathon Oil Company. Amine/phosphate composition useful as corrosion and scale inhibitor. 3,836,462, Cl. 210-58.000.

Larsile, Jacques, to Technilec. Electrical connectors. 3,836,885, Cl. 339-75.00r.

Lasker, Martin Lawrence, to Moldcast Manufacturing Company. Lighting fixtures. 3,836,767, Cl. 240-25.000.

Lassig, Harry, to Firma Fordertechnik Hamburg Harry Lassig. Container/cargo handling plant. 3,836,020, Cl. 214-16.40c.

Lauen, James E.: *See—*
Lauen, Marguerite M.; and Lauen, James E., 3,836,059.

Lauen, Marguerite M.; and Lauen, James E. Anti-roll slide and thread lock for spools. 3,836,059, Cl. 225-64.000.

Laughrey, Richard A.: *See—*
Gracia, Robert F.; Laughrey, Richard A.; and Tuohey, Paul F., 3,835,780.

Laurence, Kenneth A. Method for the chemical sterilization of male animals. 3,836,640, Cl. 424-108.000.

Lavender, John F., to Lilly, Eli, and Company. Canine distemper virus vaccine. 3,836,626, Cl. 424-89.000.

Lawrence, Thomas Russell, to Bell Telephone Laboratories, Incorporated. Display blanking circuit. 3,836,903, Cl. 340-336.000.

Lawson, Gustaf Rudolph, to AMP Incorporated. Solderless connector for insulated wires. 3,836,944, Cl. 339-99.00r.

Lawson, Ralph Leonard Joseph; and Jablonski, Zygmunt, to Lucas Electrical Company, Limited, The. Method of manufacturing a steel component having a head part and a hollow shank part. 3,835,686, Cl. 72-354.000.

Lay, Willard W.: *See—*

Rosendahl, John R.; Lay, Willard W.; and Harrer, Paul H., 3,835,629.

Layotte, Pierre Claude, to Institut Francais du Petrole des Carburants et Lubrifiants. Apparatus for inducing shear waves in the earth. 3,835,954, Cl. 181-116.000.

Le Beau, Donald J., to Smith, A. O., Corporation. Composite package. 3,835,986, Cl. 206-320.000.

Le Count, David James: *See—*
Barrett, Arthur Michael; Carter, John; Hull, Roy; Le Count, David James; and Squire, Christopher John, 3,836,671.

Le Testu, Claude. Hydropneumatic chuck actuating device. 3,835,649, Cl. 60-560.000.

Lear Siegler, Inc.: *See—*
Klicki, Chester E., 3,835,485.

Lecinski, Frank H., Jr., to Continental Can Company, Inc. Safety closure, fitment and finish. 3,836,034, Cl. 215-9.000.

Lee, Pui Kum: *See—*
Strehlow, Wolfgang H.; Lee, Pui Kum; and Packard, James R., 3,836,224.

Lee, Raymond, Organization, Inc., The: *See—*
Stevens, Peter, 3,835,808.

Lee, Richard E., to United Aircraft Corporation. Seal means for blade and shroud. 3,836,279, Cl. 415-116.000.

Leelanau Industries, Inc.: *See—*
Forgrave, Malcolm C., 3,836,150.

Leesona Corporation: *See—*
Cowan, Larry Clyde, 3,835,751.

Lehanneur, Claude J., to Campenon Bernard Europe. Submersible tanks containing oil or similar liquids. 3,835,654, Cl. 61-46.500.

Lehman, Richard F., to Xerox Corporation. Color xerography. 3,836,244, Cl. 355-4.000.

Leiber, Heinz, to Teldix GmbH. Hydraulic unit. 3,836,206, Cl. 303-10.000.

Leidy, Harold T.; Kerrigan, Charles M.; and Byble, Duane C., to General Foods Corporation. Sausage analog. 3,836,678, Cl. 426-350.000.

Leipelt, Paul A.: *See—*
Grosswiller, Leo J. Jr.; Deutsch, Fritz A.; and Leipelt, Paul A., 3,836,980.

Leitz, Ernst, GmbH: *See—*
Broemer, Heinz; Huber, Werner; Meinert, Norbert; and Spincic, Johann, 3,836,375.

Leitz, Ernst, GmbH, Firma: *See—*
Lohl, Gunter; Schneider, Wolfgang; Schroder, Heinz; and Noack, Rudolf, 3,836,932.

Lemme, Charles D.: *See—*
McNally, Sellers B.; and Lemme, Charles D., 3,836,132.

Lemmey, Edgar S.: *See—*
Dine, Lester A.; and Lemmey, Edgar S., 3,836,927.

Lenea, George H.: *See—*
Katzmark, Peter C.; and Lenea, George H., 3,836,055.

Lenert, August: *See—*
Dietz, Kurt; Lenert, August; Silbermann, Karl; Appelt, Gunther; and Elsas, Adolf, 3,836,803.

Leonard, George E., to Kartridge Pak Co., The. Remotely adjustable filling head. 3,835,898, Cl. 141-152.000.

Leonard, Robert G.: *See—*
Nachtigal, Chester L.; Hillberry, Benny M.; Goodson, Raymond E.; and Leonard, Robert G., 3,836,757.

Leonardi, Samuel S. Earth boring device. 3,835,942, Cl. 175-96.000.

Leonhardt, Fritz; Hahn, Volker; and Fastenau, Werner, to Ed. Zublin Aktiengesellschaft. Device for connecting metallic sleeves to finned reinforcing bars. 3,835,690, Cl. 72-415.000.

Lerner, Irwin S., to Robins, A. H., Company, Incorporated. Intrauterine contraceptive device. 3,835,850, Cl. 128-130.000.

Lerner, Julius: *See—*
Campbell, George E., Jr.; and Lerner, Julius, 3,835,736.

Lesbros, Andre Jose; and Brachet, Max Jacques Roul, to Societe Miniere et Metallurgique de Penarroya. Reactor for the production of lead oxide with a high free-lead content. 3,836,339, Cl. 23-277.00r.

Leslie, Myron E., to Hussong-Walker-Davis Co. Dyeing apparatus. 3,835,672, Cl. 68-206.000.

Lesserteur, Michel: *See—*
Darpentigny, Charles; Lesserteur, Michel; Chatillon, Viry; and Lux, Daniel, 3,836,047.

Leutner, Volkmar; and Romes, Roman, to Bosch, Robert, GmbH. Electro hydraulic servo control valve. 3,835,888, Cl. 137-625.6q0.

Levenberg, Nat. Rapid assembly table construction. 3,835,795, Cl. 108-157.000.

Lever Brothers Company: *See—*
Fischer, Wilhelm; Krause, Friedrich; Biesner, Walter; and Sonnenmoser, Hubert, 3,836,688.
Hoyles, Ronald; and Mitchell, Stanley Alan, 3,836,641.

Levin, Herbert L., to International Telephone and Telegraph Corporation. Transit/combination case shock mount arrangement. 3,836,043, Cl. 220-504.000.

Levine, Michael R.: *See—*
Boenke, Clyde O.; Miller, Murray H.; Levine, Michael R.; Rigotte, Victor H.; Vivian, Weston E.; and Hall, William C., 3,836,888.

Lewis, Alan Glueck, to GAF Corporation. Folding viewer. 3,836,228, Cl. 350-140.000.

Lewis, John Henry; Morsell, Arthur Lee; and Welkowsky, Murray Samuel, to Xonics, Inc. Liquid displacement gas recovery system for electron radiography imaging chamber. 3,836,777, Cl. 250-315.000.

Lewyckyj, Roman, to Scott Paper Company. Method for creating lines of weakness in thread-reinforced structures. 3,835,754, Cl. 93-1.0ts.

Ley, Richard A.: *See—*
Thoreson, Gene A.; Ley, Richard A.; Miller, Cardell E.; and Emery, Lewis A., 3,836,125.

Liberman, Milton. Combination ceiling tile and air duct structure. 3,835,606, Cl. 52-220.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Harth, Wolfgang, 3,836,990.
Joshi, Vishnuprakash, 3,836,993.
Kruhn, Jurgen, 3,836,095.

Liedke, Heinrich: *See—*
Vernede, Louis Antoine; Nitzki, Leopold; Liedke, Heinrich; and Schror, Friedrich, 3,835,802.

Lileev, Valeryan Petrovich: *See—*
Galperin, Alexandr Lvovich; Serebryannikov, Albert Semenovich; Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; Lukoshkov, Vladimir Iosifovich; Lileev, Valeryan Petrovich; Loschilin, Evgeny Dmitrievich; Rutkevich, Zinovy Yakovlevich; Sakharov, oris Alexandrovich; and German, Zinovy Antolievich, 3,835,893.

Lilly, Eli, and Company: *See—*
Lavender, John F., 3,836,626.

Limoge, Aime. Method for obtaining neurophysiological effects. 3,835,833, Cl. 128-1.00c.

Lin, Luke C., to Xerox Corporation. Photoelectrosolographic process for making multiple images. 3,836,364, Cl. 96-1.400.

Lindner, Ernst: *See—*
Stache, Ulrich; Haede, Werner; Fritsch, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,836,520.

Lindskog, Per Folke; and Svensson, Lars-Erik, to Hoganas AB. Steel powder containing phosphorus. 3,836,355, Cl. 75-.5ba.

Ling, Ting H.; Wade, Robert M.; and Solomon, Marwich, H., to Anaconda Company, The, mesne. Semiconducting composition of chlorinated polyolefin, ethylene ethyl acrylate and semiconducting carbon black. 3,836,482, Cl. 252-511.000.

Links, Heinz, to Bosch, Robert, GmbH. Fuel injection apparatus for internal combustion engines. 3,835,829, Cl. 123-139.00r.

Linsley, E. Partridge. Stair ascending or descending cart. 3,836,160, Cl. 280-5.320.

Linton, Richard H.: *See—*
De Simone, Roy R.; Donofrio, Nicholas M.; Linton, Richard H.; Sonoda, George; and Wade, William T., 3,836,892.

Lipp, James: *See—*
Cobb, Richard O.; and Lipp, James, 3,835,998.

Lippisch, Guillermo W., to Junkunc Bros. American Lock Company. Security padlock. 3,835,675, Cl. 70-38.00a.

Lister, Glenn F. Adjustable step mold with product release means. 3,836,109, Cl. 249-14.000.

Lith-Kem Corporation: *See—*
Silver, Julius L., 3,836,366.

Liu, Peter T.: *See—*
Abbas, Shakir A.; Barile, Conrad A.; Lane, Ralph D.; and Liu, Peter T., 3,836,992.

Livingston, William L. Discharge head and fire protection system utilizing same whereby the head is actuatable in response to two separate temperatures. 3,835,931, Cl. 169-70.000.

Lloyd, Jeffrey Neil, to Clear Hooters Limited. Ventilating nozzle including a universally swivellable nozzle member. 3,835,759, Cl. 98-40.00d.

Lloyd, Samuel Harry, III; and Goren, Yorman, to Santa Fe Drilling Company. Twin hull semi-submersible derrick barge. 3,835,800, Cl. 114-.50r.

Lockwood Corporation: *See—*
Olson, Rich L.; Roland, Murray C.; and Hammond, Clif, 3,836,078.

Loed Corporation, mesne: *See—*
Olson, Eugene D.; and Aiello, Salvatore F., 3,836,025.

Loftis, James B.: *See—*
Moody, David L.; and Loftis, James B., 3,835,938.

Lohl, Gunter; Schneider, Wolfgang; Schroder, Heinz; and Noack, Rudolf, to Leitz, Ernst, GmbH, Firma. Photographic camera with interchangeable film system. 3,836,932, Cl. 354-159.000.

Lohse, Horst: *See—*
Frungel, Frank; and Lohse, Horst, 3,836,233.

Lomax, Donald P.: *See—*
Saltzman, Gilbert A.; Otani, Tony U.; and Lomax, Donald P., 3,836,341.

Londahl, Goran Stig; and Eek, Lars Inge, to Frigoscandia Contracting AB. Apparatus for producing frozen meat cubes, hamburgers and similar units. 3,835,764, Cl. 99-517.000.

Looney, Catharine E.; Michel, Rudolph H.; and Sahatjian, Ronald A., to Du Pont de Nemours, E. I., and Company. Diazo photosensitive composition. 3,836,369, Cl. 96-91.00r.

Lorain Products Corporation: *See—*
Becker, Dustin J., 3,836,790.
Wehman, Alan W., 3,836,854.

Lord, Harry C.: *See—*
Egan, Dale W.; Holstrom, Geoffrey B.; Lord, Harry C.; Stevens, Robert W.; Port, Darrell P.; and Howard, Rollen D., 3,836,237.

Lord, John G., to Cotton, Incorporated. Garment heating apparatus. 3,835,552, Cl. 34-151.000.

Lorenz, Ewald; Schlink, Wilhelm; Kunzler, Bruno; and Goltermann, Klaus-Dieter, to Koh-I-Noor Rapidograph, Inc., mesne. Tube writing pen. 3,836,266, Cl. 401-259.000.

Loschilin, Evgeny Dmitrievich: *See—*
Galperin, Alexandr Lvovich; Serebryannikov, Albert Semenovich; Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; Lukoshkov, Vladimir Iosifovich; Lileev, Valeryan Petrovich; Loschilin, Evgeny Dmitrievich; Rutkevich, Zinovy Yakovlevich; Sakharov, oris Alexandrovich; and German, Zinovy Antolievich, 3,835,893.

Lougheed, James Hugh: *See—*
Zimmermann, Detlef; and Lougheed, James Hugh, 3,836,842.

Lovadina, Armando; and Morelli, Franco, to Societa Italiana Telecomunicazioni Siemens S.p.A. System for limiting the range of A-C signals. 3,836,856, Cl. 325-187.000.

Lovelock, James E., to California Institute of Technology. Electrolytic cell for use with vapor phase detectors. 3,836,449, Cl. 204-277.000.

Lowe, Charles Thomas. Stud orienter. 3,836,048, Cl. 221-172.000.

Lowe, Russell T.; Pepi, Jerome S.; and Schubert, Dale W., to Wright, Barry, Corporation. Pneumatic isolator. 3,836,134, Cl. 267-152.000.

Lowther, Frank E., to Purification Sciences Inc. Dielectric liquid-immersed corona generator. 3,836,786, Cl. 250-540.000.

Lowy, Paul: *See—*
Ghougasian, John; Hart, Jon; Juliusburger, Hans Yohanan; and Lowy, Paul, 3,836,912.

Luberoff, Benjamin J.: *See—*
Whitehead, Richard T.; Luberoff, Benjamin J.; and Sze, Morgan Chuan-Yuan, 3,836,461.

Lubrizol Corporation, The: *See—*
Gamble, Peter Dennis, 3,835,700.
Miller, Clark Ober, 3,836,469.
Miller, Clark Ober, 3,836,470.
Miller, Clark Ober, 3,836,471.

Lucas Electrical Company, Limited, The: *See—*
Lawson, Ralph Leonard Joseph; and Jablonski, Zygmunt, 3,835,686.

Lucas, Joseph (Electrical) Limited: *See—*
Hughes, Thomas L.; and Massey, Peter Graham, 3,837,001.

Lucas, Joseph, (Industries) Limited: *See—*
Hill, William Frank; and Cattermole, Roger Edward, 3,835,821.

Lucas, Paul G., to Gordon Engineering Company. Circuit for measuring an unknown resistance by using a voltage ratio. 3,836,847, Cl. 324-62.000.

Lucid, Michael F.: *See—*
Baldwin, Roger A.; Bowerman, Paul D.; and Lucid, Michael F., 3,836,476.

Ludlow Corporation: *See—*
Whiting, Philip C., Jr., 3,836,425.

Lugo, Luigi: *See—*
Reni, Cesare; Lugo, Luigi; and Gualdi, Giorgio, 3,836,588.

Lukas, Josef, to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH. Percussion type photoflash lamp. 3,836,317, Cl. 431-93.000.

Luke, William George, to English Clays Lovering Pochin & Company Limited. Automatic remote control apparatus. 3,836,084, Cl. 239-587.000.

Lukoshkov, Vladimir Iosifovich: *See—*
Galperin, Alexandr Lvovich; Serebryannikov, Albert Semenovich; Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; Lukoshkov, Vladimir Iosifovich; Lileev, Valeryan Petrovich; Loschilin, Evgeny Dmitrievich; Rutkevich, Zinovy Yakovlevich; Sakharov, oris Alexandrovich; and German, Zinovy Antolievich, 3,835,893.

Lummus Company, The: *See—*
Whitehead, Richard T.; Luberoff, Benjamin J.; and Sze, Morgan Chuan-Yuan, 3,836,461.

Lunsford, Max W., to Ford Motor Company. Carburetor ambient mixture control. 3,836,128, Cl. 261-39.00a.

Luttmer, Willem, to International Computers Limited. Methods of forming circuit interconnections. 3,835,531, Cl. 29-526.000.

Lux, Benno; Funk, Roland; Schachner, Herbert; and Triquet, Christian, to Sandvik AB, mesne. Process for increasing the resistance to wear of the surface of hard metal cemented carbide parts subject to wear. 3,836,392, Cl. 117-169.00r.

Lux, Daniel: *See—*
Darpentigny, Charles; Lesserteur, Michel; Chatillon, Viry; and Lux, Daniel, 3,836,047.

M & J Development Company: *See—*
Grove, Marvin H., 3,835,695.

M & J Valve Company: *See—*
Grove, Marvin H., 3,835,695.

M and S Engineering, Inc.: *See—*
Meyer, Robert W.; and Swanson, Robert G., 3,836,314.

MacDonald, Ronald A. Free piston engine. 3,835,824, Cl. 123-46.00r.

MacGregor, Douglas. Electrowinning of ores. 3,836,443, Cl. 204-105.00m.

Machner, Peter J. V.: *See—*
Holzgruber, Wolfgang W.; Machner, Peter J. V.; and Schwarz, Ludwig, 3,835,915.

MacKenzie, Robert D.: *See—*
Thompson, Ronald J.; and MacKenzie, Robert D., 3,835,835.

MacManus, John. Apparatus for use in depositing aerated food products. 3,836,057, Cl. 222-529.000.

Maeda, Minoru; and Ikushima, Ichiro, to Hitachi, Ltd. Lumped element circulator. 3,836,874, Cl. 333-1.100.

Maerker, Gerhard: *See—*
Kenney, Harold E.; Donahue, Edward T.; and Maerker, Gerhard, 3,836,468.

Maggioni, Paolo, to Brichima S.p.A. Process for the preparation of diphenols. 3,836,591, Cl. 260-621.00g.

Magnani, Luigi: *See—*
Beretta, Paolo; and Magnani, Luigi, 3,836,370.

Maher, Charles E., to Medical Innovations, Inc. Cardiac synchronization system and method. 3,835,845, Cl. 128-64.000.

Mahino, Zenichi: *See—*
Noguchi, Masaaki; Yanagioka, Hiroshi; Kanai, Toshio; Nishiguchi, Kazuo; Hashimoto, Hideo; Abe, Katuhiro; Masuko, Tomio; Mahino, Zenichi; and Kogawa, Yosio, 3,836,630.

Mahoney, Elmo J., to Mahoney, Inc. Portable projectile return apparatus. 3,836,144, Cl. 273-1.50a.

Mahoney, Inc.: *See—*
Mahoney, Elmo J., 3,836,144.

Majersky, Andrew S. Collapsible straightener for automobile frames. 3,835,693, Cl. 72-457.000.

Maki Manufacturing Co., Ltd.: *See—*
Horii, Taro, 3,835,983.

Maki, Takeshi: *See—*
Nonaka, Kohei; Tanaka, Masaho; Maki, Takeshi; Harada, Ikuo; and Hamasaki, Masafumi, 3,836,168.

Maki, Yamashita: *See—*
Shogo, Suzuki; and Maki, Yamashita, 3,836,934.

Makris, William E.: *See—*
Dean, Warren E.; and Makris, William E., 3,836,442.

Malamoud, Jean Gaston. Flint driving mechanism for a lighter. 3,836,319, Cl. 431-276.000.

Malan, George L. Reinforceable vibrator system. 3,836,124, Cl. 259-1.00r.

Malaval, Claude, to Groupement Atomique Alsacienne Atlantique. Process for pumping liquid metals by a drive effect and a pump implementing this process. 3,836,286, Cl. 417-50.000.

Malick, Christopher B. Contrast control apparatus for a camera. 3,836,923, Cl. 354-32.000.

Mallinckrodt, Charles O., to TRW Inc. Beamformer scanning systems. 3,836,886, Cl. 340-6.00r.

Mandelbaum, William; and Violette, John A., to United Aircraft Corporation. Stator vane support and construction thereof. 3,836,282, Cl. 415-217.000.

Mann, Larry L., to Kaiser Aluminum & Chemical Corporation. Method for lining rotary kilns. 3,836,612, Cl. 264-30.000.

Mannesmann-Meer Aktiengesellschaft: *See—*
Elger, Ronald John, 3,835,682.

Manning, Raymond J. Wheeled toy. 3,835,583, Cl. 46-201.000.

Manning, Virgil B. Rotatable dart board, magnetic darts and magnetic scoring switches. 3,836,148, Cl. 273-95.00r.

Mansfield, John William Brian, to Fleet Electronics Limited. Recording or alarm devices. 3,836,900, Cl. 340-279.000.

Mansfield Sanitary, Inc.: *See—*
Derror, Fred L., 3,836,312.

Mantey, John P.: *See—*
Harris, John P.; Mantey, John P.; and Wood, David R., 3,836,833.

Mantino, Michael J. Lifting apparatus. 3,836,024, Cl. 214-75.00h.

Marathon Oil Company: *See—*
Larsen, Arthur Lee, 3,836,462.
Rhudy, John S.; and Davis, John A., Jr., 3,836,465.

Maravetz, Lester L., to Mobil Oil Corporation. Derivatives of hydroxybenzo(b) thiophene. 3,836,542, Cl. 260-330.500.

Marchetti, Albert A.: *See—*
Butterfield, Donald B.; and Marchetti, Albert A., 3,836,080.

Marcoux, Emery. Sheet material cutter. 3,835,536, Cl. 30-294.000.

Marcussen, Lee R.: *See—*
Barrett, James H., Jr.; and Marcussen, Lee R., 3,836,938.

Maremont Corporation: *See—*
McNally, Sellers B.; and Lemme, Charles D., 3,836,132.

Margetts, Hugh Grenville, to Girling Limited. Shoe-drum brakes. 3,835,964, Cl. 188-79.5gt.

Margulis, Grigory Borisovich: *See—*
Antonenko, Grigory Semenovich; Badamian, Avetik Artashesovich; Margulis, Grigory Borisovich; Moroz, Ilya Alexandrovich; and Shitsman, Mikhail Borisovich, 3,835,689.

Marschak, Howard J. Means for preventing unauthorized removal of a power tool or the like from a display board. 3,836,105, Cl. 248-223.000.

Marsh, Anthony, to Plessey Handel und Investments A.G. Circular magnetic domain devices. 3,836,897, Cl. 340-174.0tf.

Marshall, Frank Graham; and Paige, George Sydney, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the. Acoustic surface wave devices. 3,836,876, Cl. 333-30.000.

Marta, Henry A.; and Swenson, Curtis A., to General Motors Corporation. Railway truck positioning apparatus. 3,835,787, Cl. 105-176.000.

Martin, Gilbert Marius: *See—*
David, Pierre Yvon; and Martin, Gilbert Marius, 3,835,801.

Martin, Heinz: *See—*
Platzoeder, Karl; Martin, Heinz; and Emeis, Reimer, 3,837,000.

Platzoeder, Karl; Martin, Heinz; and Emeis, Reimer, 38,367,000.
Martin, Jerry Roy: *See—*
Hallas, Robert; Martin, Jerry Roy; and Tadanier, John Soloman, 3,836,519.
Martin Marietta Corporation: *See—*
Wells, Joel D.; Sabin, Albert S.; Kahn, William J.; and Wigner, William K., 3,836,726.
Wells, Joel Douglas, 3,836,974.
Maruszczak, Wlodzimierz W., to Wean United, Inc. Strip accumulator. 3,836,088, Cl. 242-55.000.
Masaki, Kenji; and Nishimura, Hiroshi, to Nissan Motor Company, Limited. Apparatus for warming cooling and/or lubricating media of internal combustion engines. 3,835,903, Cl. 165-23.000.
Masaki, Mitsuo; Uchida, Masaru; Oda, Taizi; and Yamamoto, Koichi, to UBE Industries, Ltd. Process for the preparation of lactams and sulfonic acid derivatives. 3,836,525, Cl. 260-239.30a.
Maschinenfabrik Hennecke GmbH: *See—*
Osinsky, Ulrich; and Althausen, Ferdinand, 3,836,110.
Mashimo, Yukio: *See—*
Hasegawa, Goro; Nakamoto, Soichi; Takishima, Yoshiyuki; Mashimo, Yukio; Taguchi, Tatsuya; Nakamura, Zenzo; and Taguchi, Tetsuya, 3,836,922.
Uchiyama, Takashi; Taguchi, Tetsuya; and Mashimo, Yukio, 3,836,920.
Maslyk, Frank J.: *See—*
Krawitz, Leonard; Maslyk, Frank J.; and Patterson, Leland W., 3,836,344.
Masserschmitt-Bolkow-Blohm GmbH: *See—*
Butter, Karl; and Knauer, Kuno, 3,835,644.
Massey, Derek James Rowland: *See—*
Barber, Albert John; Massey, Derek James Rowland; McCartney, James; and Winterbottom, Kenneth, 3,836,390.
Massey, John M., to Massey Welding Company. Method of manufacturing rejuvenated scarfing blocks. 3,835,524, Cl. 29-401.000.
Massey, Peter Graham: *See—*
Hughes, Thomas L.; and Massey, Peter Graham, 3,837,001.
Massey Welding Company: *See—*
Massey, John M., 3,835,524.
Massonne, Joachim: *See—*
Paucksch, Heinrich; Massonne, Joachim; and Derleth, Helmuth, 3,836,479.
Mast, John B. Mini-scale space mechanics simulator. 3,835,554, Cl. 35-45.000.
Master Lock Company: *See—*
Foote, Daniel J., 3,835,676.
Masuda, Yasutoshi: *See—*
Yamanaka, Masami; and Masuda, Yasutoshi, 3,835,945.
Masuko, Tomio: *See—*
Noguchi, Masaaki; Yanagioka, Hiroshi; Kanai, Toshio; Nishiguchi, Kazuo; Hashimoto, Hideo; Abe, Katuhiro; Masuko, Tomio; Mahino, Zenichi; and Kogawa, Yosio, 3,836,630.
Masumoto, Isao: *See—*
Terai, Kiyoshi; and Masumoto, Isao, 3,836,748.
Masure, Daniel: *See—*
Sartre, Bernard; Pigeaud, Jean-Marie; and Masure, Daniel, 3,836,438.
Matherly, James E., to Dow Corning Corporation. Method for sealing high pressure fuel tanks and sealing composition therefor. 3,836,623, Cl. 264-267.000.
Matschke, Arthur L.; and Horowitz, Jack W., to Tele Speed Communications, Inc. Matrix printer drive element. 3,836,880, Cl. 335-274.000.
Matsubara, Izuru: *See—*
Mori, Takahisa; and Matsubara, Izuru, 3,835,989.
Matsuda, Kazuo; Tanaka, Yoshiaki; and Aritaki, Hirakazu, to Kao Soap Co., Ltd. Aqueous dispersion of epichlorhyrin modified polyurethane prepolymer polyamine product. 3,836,493, Cl. 260-29.2tn.
Matsuda, Motonobo: *See—*
Yata, Kotaro; and Matsuda, Motonobo, 3,836,262.
Matsufuji, Akira: *See—*
Nakamura, Shoji; Matsufuji, Akira; Tokushige, Masahiro; and Kato, Kunihiro, 3,836,325.
Matsukawa, Hiroharu: *See—*
Kiritani, Masataka; Matsukawa, Hiroharu; and Aoki, Masayuki, 3,836,383.
Matsuki, Masakatsu; and Yoshida, Toyoaki, to National Aerospace Laboratory of Science and Technology Agency, The Director of. Construction of axial-flow turbine blades. 3,836,283, Cl. 416-96.000.
Matsumoto, Hiroyuki: *See—*
Ando, Tetsuo; and Matsumoto, Hiroyuki, 3,836,906.
Matsumoto, Jun-Ichi: *See—*
Minami, Shinsaku; Matsumoto, Jun-Ichi; Shimizu, Masanao; and Takase, Yoshiyuki, 3,836,528.
Matsumoto, Kazuya, to Canon Kabushiki Kaisha. Method for optical detection and/or measurement of movement of diffraction grating. 3,836,257, Cl. 356-111.000.
Matsumoto, Seiichi; Hosoe, Kuzuya; and Mochizuki, Noritaka, to Canon Kabushiki Kaisha. Automatic focusing device for use with a photographic camera. 3,836,919, Cl. 354-25.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Fukushima, Juichi; and Nagahiro, Michinori, 3,836,096.
Meki, Nori; and Irie, Hiroyuki, 3,836,708.
Nakajima, Takatsugu, 3,836,692.
Matsushita, Shigeo: *See—*
Sumimoto, Toru; Matsushita, Shigeo; Fujiware, Tadafumi; Koizumi, Ken; and Yamazaki, Tetsuya, 3,836,348.
Mattal, Joseph P.: *See—*
Courten, Henry C.; and Mattal, Joseph P., 3,836,258.
Mattheij, Mathieu Martinus Maria Petrus: *See—*
Johanns, Johannes Hendricus Maria; De Boer, Thijs Johannes; De Haan, Edward Fokko; Van Gelder, Zeger; and Mattheij, Mathieu Martinus Maria Petrus, 3,836,810.
Matthews, Richard, to DiMaio, John. Therapeutic conditioner for horses. 3,835,815, Cl. 119-158.000.
Matthias, Guenther; Schulz, Gerhard; Kasper, Werner; and Feind, Klaus, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of ketene. 3,836,583, Cl. 260-585.500.
Mattia, Armand D.; and Bracka, Bruno W., to General Dynamics Corporation. Aircraft cargo ramp system. 3,836,101, Cl. 244-137.000.
Matto, Victor G.; and Schubert, Howard C., to Aerolite Electronics Corporation. Motion-sensitive alarm with line-card-responsive automatic arming means. 3,836,901, Cl. 340-280.000.
Mavrovic, Ivo. Process for prilling urea. 3,836,611, Cl. 264-14.000.
Maxson Electronics Corporation: *See—*
Shnitkin, Harold; Tashjian, Albert; and Shubel, Edward J., 3,836,973.
Mayer, Mayer, Jr.; Kotter, James I.; Salaun, Harold L., Jr.; and Brown, Roger S., to United States of America, Agriculture. Process for producing core yarn. 3,835,638, Cl. 57-144.000.
Mayers, Bernard J.: *See—*
Evers, William J.; Heinsohn, Howard H., Jr.; and Mayers, Bernard J., 3,836,563.
Mazgy, James Dimitri: *See—*
Payne, Michael Ian; and Mazgy, James Dimitri, 3,836,845.
Mc Coy, William: *See—*
Huth, R. Carl; and Mc Coy, William, 3,835,799.
McBride, Lyle E., Jr., to Texas Instruments Incorporated. Thermal expansion valve refrigeration systems. 3,835,659, Cl. 62-202.000.
McCartney, James: *See—*
Barber, Albert John; Massey, Derek James Rowland; McCartney, James; and Winterbottom, Kenneth, 3,836,390.
McConaughy, David F., to Albany International Corporation. Adjustable slot suction box cover. 3,836,428, Cl. 162-274.000.
McConough Co.: *See—*
Robison, James W.; and Eads, Harold O., 3,835,535.
McCoy, Roland A.: *See—*
Butterworth, Arthur B., 3,835,651.
McCray, Walter A.: *See—*
Jago, Edward John; and McCray, Walter A., 3,836,112.
McDaniel, George H., to Bendix Corporation, The. Tape reader system with buffer memory. 3,836,891, Cl. 340-172.500.
McDermott, David C., to Shell Oil Company. Method and apparatus for supplying temporary buoyancy to an underwater pipeline. 3,835,656, Cl. 61-72.300.
McDonald, Jack: *See—*
Brooks, James, Jr., 3,835,980.
McDonnell Douglas Corporation: *See—*
De Garcia, Horacio J., Jr.; and Zimmerman, Vincent H., 3,835,643.
Donahoe, John K., 3,836,193.
McEntire, Robert H., to Atlantic Richfield Company. Well drilling. 3,835,939, Cl. 175-65.000.
McGuire, George. Bone clamp and adjustable drill guide. 3,835,849, Cl. 128-92.0eb.
McIllwain, James C. Side finger conveyer. 3,835,786, Cl. 104-172.00s.
McInnes, Alexander G. P., to International Research and Development Corporation. Tapered drill bit. 3,836,278, Cl. 408-199.000.
McIntyre, James E.: *See—*
Piccone, Dante E.; Somos, Istvan; and McIntyre, James E., 3,836,994.
McMurtry, David Harwood, to International Business Machines Corporation. Optical character recognition scanning apparatus. 3,836,958, Cl. 340-146.30f.
McNally, Sellers B.; and Lemme, Charles D., to Maremont Corporation. Self-leveling combined shock absorber and fluid spring assist unit. 3,836,132, Cl. 267-64.00r.
McNamara, Thomas F.; and Perper, Timothy P., to Warner-Lambert Company. Sugar composition. 3,836,396, Cl. 127-30.000.
McWilliams, Joseph E. Apparatus for handling mail bags. 3,836,021, Cl. 214-41.000.
Mead Corporation, The: *See—*
Burnett, Mackenzie; Brady, Cyrus T.; Duffield, Peter L.; and Houser, Phillip H., 3,836,913.
Calvert, Rodney K.; and Fishback, Alton J., 3,835,979.
Duffield, Peter L., 3,836,914.
Medical Innovations, Inc.: *See—*
Maher, Charles E., 3,835,845.
Mee, John L. High-speed non-impact laser printing apparatus. 3,836,917, Cl. 354-5.000.
Mefina S.A.: *See—*
Fresard, Marcel, 3,835,798.
Megumi, Koichi: *See—*
Akiyama, Seikichi; Kozuka, Hirotsugu; and Megumi, Koichi, 3,836,632.
Mehl, Donald N.: *See—*
Kluver, Dennis A.; and Mehl, Donald N., 3,836,242.
Meier, Eric A.: *See—*
Skoultchi, Martin; and Meier, Eric A., 3,836,571.
Meinert, Norbert: *See—*

Broemer, Heinz; Huber, Werner; Meinert, Norbert; and Spincic, Johann, 3,836,375.
Meisei Electric Co., Ltd.: *See*—
Ohara, Sigeo; Toshimura, Fumio; and Sugai, Kazuhiko, 3,836,723.
Meisner, Alfred; and Spitzl, Walter, to Diehl, Firma. Bearing assembly for precision mechanisms. 3,836,213, Cl. 308-159.000.
Meki, Nori; and Irie, Hiroyuki, to Matsushita Electric Industrial Co., Ltd. Color television saturation control. 3,836,708, Cl. 178-5.4ac.
Melachrinos, Basil D., to Paraskeva, Theophanis. Method of rapidly determining the plasticity index of calcareous materials. 3,836,330, Cl. 23-230.00r.
Melchior, Hans, to Bell Telephone Laboratories, Incorporated. Liquid crystal display apparatus. 3,836,243, Cl. 353-122.000.
Melnick, Joseph L.: *See*—
Wallis, Craig; and Melnick, Joseph L., 3,836,458.
Memorex Corporation: *See*—
Hurtig, Roy E.; and Geri, Don W., 3,836,091.
Merck & Co., Inc.: *See*—
Baldwin, John J.; and Novello, Frederick C., 3,836,658.
Tristram, Edward W.; and ten Broeke, Jan, 3,836,585.
Merck Patent Gesellschaft mit beschrankter Haftung: *See*—
Irmscher, Klaus; Freisberg, Karl-Otto; Orth, Dieter; Nowak, Herbert; and Simane, Zdenek, 3,836,527.
Merlino, Eugene L., Jr.: *See*—
Funk, John W.; Merlino, Eugene L., Jr.; and Woods, Daniel J., 3,835,771.
Messerschmitt-Bolkow-Blohm GmbH: *See*—
Helmcke, Conrad; Hermann, Walter; and Kraus, Peter, 3,836,770.
Messina, Benedicto U.: *See*—
Duke, Keith A.; and Messina, Benedicto U., 3,836,957.
Metallgesellschaft Aktiengesellschaft: *See*—
Reh, Lothar; Bohm, Eberhard; and Schoene, Gunter, 3,836,635.
Metcalfe, Kenneth A.; Clements, Alwin S.; and Wilson, Clive W., to Commonwealth of Australia, care of the Secretary. Method of developing an electrophotographic image with a bias field. 3,836,361, Cl. 96-1.0ly.
Metcalfe, Kenneth A.; Clements, Alwin S.; and Wilson, Clive W., to Commonwealth of Australia, care of the Secretary, Department of Supply. Method of developing a dielectric pattern on a semiconductor surface using a two-component developer. 3,836,381, Cl. 17-17.500.
Mettler, Erhard, to Mettler Instrumente AG. Platform scale. 3,835,946, Cl. 177-256.000.
Mettler Instrumente AG: *See*—
Mettler, Erhard, 3,835,946.
Meulendyk, John W., to Pneumo Dynamics Corporation. Bi-thermal bleed valve. 3,836,074, Cl. 236-93.000.
Meyer, Barthold F.; Dully, Floyd I.; Gergoe, Bela; Kazewych, Bohdan; and Hebert, Robert M., to General Motors Corporation. Vehicle body compartment panel pull-down mechanism. 3,835,678, Cl. 70-241.000.
Meyer, Engelbert A., to USM Corporation. Adjustable work support assembly. 3,836,118, Cl. 254-104.000.
Meyer, Oscar, & Co., Inc.: *See*—
Seiferth, Oscar E.; Austin, Glenn M.; and Grace, Daniel C., 3,836,039.
Seiferth, Oscar E.; Goller, Robert L.; Grindrod, Paul E.; and Radloff, Harry L., 3,836,679.
Meyer, Robert W.; and Swanson, Robert G., to M and S Engineering, Inc. Mold and clamp for use in an automatic casting machine. 3,836,314, Cl. 425-451.900.
Meyer, Ronald E.: *See*—
Whistler, Charles C., Jr.; and Meyer, Ronald E., 3,836,221.
Meyer, William G.: *See*—
Padula, Arthur H.; Meyer, William G.; and Hollowell, John V., 3,835,600.
Miceli, Angelo S., to Uniroyal, Inc. Buoyant liquid-conveying hose. 3,835,890, Cl. 138-103.000.
Michel, Rudolph H.: *See*—
Looney, Catharine E.; Michel, Rudolph H.; and Sahatjian, Ronald A., 3,836,369.
Michon, Gerald J.: *See*—
Burke, Hubert K.; and Michon, Gerald J., 3,836,773.
Mickle, John L.; and Horn, Norman E., to Brunswick Corporation. Cooled fuel pump for internal combustion engines. 3,835,822, Cl. 123-41.310.
Middletown Manufacturing Co., Inc., mesne: *See*—
Goff, McKinley; and Crum, Donald, 3,836,197.
Midland-Ross Corporation: *See*—
Buhl, Walter T., 3,836,161.
Hemsath, Klaus H.; Vereecke, Frank J.; and Ferguson, Norman T., 3,836,320.
Mikami, Satoshi: *See*—
Sakamoto, Hisashi; Sasaki, Takeshi; Mikami, Satoshi; and Nakashima, Yoichi, 3,837,002.
Mikami, Takeo: *See*—
Yoshizawa, Masao; Mikami, Takeo; Kobayashi, Nobuo; and Iida, Akira, 3,836,507.
Mildrex Corporation, mesne: *See*—
Beggs, Donald, 3,836,131.
Miles Laboratories, Inc.: *See*—
Collier, Henry Oswald Jackson; and Warren, Brian Thomas, 3,836,667.
Milette, Kenneth A.; Garavelli, Frank D.; and Tolleson, Thomas H., to Samsonite Corporation. Folding chair. 3,836,194, Cl. 297-55.000.
Milette, Kenneth Arthur; and Uyeda, Tim Minoru, to International Telephone and Telegraph Corporation. Toilet valve assembly. 3,835,479, Cl. 4-79.000.
Miller, Calvin L.: *See*—
Bertram, August H.; and Miller, Calvin L., 3,835,722.
Miller, Cardell E.: *See*—
Thoreson, Gene A.; Ley, Richard A.; Miller, Cardell E.; and Emery, Lewis A., 3,836,125.
Miller, Clark Ober, to Lubrizol Corporation, The. Lubricants and fuels containing ester-containing compositions. 3,836,469, Cl. 252-40.500.
Miller, Clark Ober, to Lubrizol Corporation, The. Lubricants and fuels containing ester-containing compositions. 3,836,470, Cl. 252-51.50a.
Miller, Clark Ober, to Lubrizol Corporation, The. Lubricants and fuels containing ester-containing compositions. 3,836,471, Cl. 252-51.50a.
Miller, Gerald K.: *See*—
Duvall, Kenneth M.; and Miller, Gerald K., 3,836,899.
Miller, Harlan E., to International Telephone and Telegraph Corporation. Telephone ringer sharing arrangement. 3,836,728, Cl. 179-84.00r.
Miller, Harold C.; Cranford, Wilbert W., Jr.; and Brophy, James J., to United States of America, Army. Mine fuze. 3,835,784, Cl. 102-70.20r.
Miller, James G., to Owens-Illinois, Inc. Pipe coupling system for glass or ceramic pipes and related materials. 3,836,182, Cl. 285-114.000.
Miller, John Paul: *See*—
Brookins, Richard H.; and Miller, John Paul, 3,836,464.
Miller, Murray H.: *See*—
Boenke, Clyde O.; Miller, Murray H.; Levine, Michael R.; Rigotte, Victor H.; Vivian, Weston E.; and Hall, William C., 3,836,888.
Miller, Robert C. Orbital sealed chamber engine. 3,835,823, Cl. 123-42.000.
Miller, Ronald H.; and Radli, Bruce A., to Container Corporation of America. Display stand. 3,836,104, Cl. 248-150.000.
Millington, James Peter, to Electricity Council, The. Electrochemical oxidation process. 3,836,441, Cl. 204-78.000.
Minami, Shinsaku; Matsumoto, Jun-Ichi; Shimizu, Masanao; and Takase, Yoshiyuki, to Dainippon Pharmaceutical Co., Ltd. α-(5-Nitro-2-furyl) nitrones. 3,836,528, Cl. 260-240.00a.
Minks, Werner, to International Standard Electric Corporation. Tilting system. 3,836,878, Cl. 335-128.000.
Minnesota Mining & Manufacturing Company: *See*—
Strehlow, Wolfgang H.; Lee, Pui Kum; and Packard, James R., 3,836,224.
Minnesota Mining and Manufacturing Company: *See*—
Beretta, Paolo; and Magnani, Luigi, 3,836,370.
Gould, Jay W., III; and Phillipson, Phillip William, 3,835,569.
Holmen, Reynold E.; and Cook, Jack E., 3,836,227.
Mix, Robert C., 3,836,090.
Minolta Camera Kabushiki Kaisha: *See*—
Shogo, Suzuki; and Maki, Yamashita, 3,836,934.
Yata, Kotaro; and Matsuda, Motonobo, 3,836,262.
Mintz, Michael D., to International Technidyne Corporation. System for timing the coagulation of blood. 3,836,333, Cl. 23-259.000.
Mitchell, Donald R. Scarifier-pulverizer. 3,835,932, Cl. 172-197.000.
Mitchell, Stanley Alan: *See*—
Hoyles, Ronald; and Mitchell, Stanley Alan, 3,836,641.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Asano, Tetsumasa; Takamiya, Hiroshi; and Morimoto, Yoshinobu, 3,835,950.
Taketo, Kiyoshi; Ito, Toshio; and Kishimoto, Fikutaro, 3,836,744.
Ueda, Atsushi; and Ishii, Mitsuaki, 3,836,887.
Mitsubishi Electric Corporation: *See*—
Nakamura, Shoji; Matsufuji, Akira; Tokushige, Masahiro; and Kato, Kunihiro, 3,836,325.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Sano, Tutomu; and Doya, Masaharu, 3,836,445.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Kubota, Satoru; and Morikawa, Yuji, 3,835,687.
Ujiie, Akira, 3,835,914.
Ujiie, Akira, 3,835,916.
Mitsubishi Kinzoku Kogyo Kabushiki Kaisha: *See*—
Yamashita, Junnosuke; and Negishi, Hideo, 3,835,593.
Mitsubishi Pencil Co., Ltd.: *See*—
Saito, Akio; Fukazawa, Kiyohiko; and Motoyama, Yukitoshi, 3,836,264.
Mitsubishi Petrochemical Co., Ltd.: *See*—
Morisawa, Takao, 3,836,504.
Mix, Robert C., to Minnesota Mining and Manufacturing Company. Long yardage tape core assembly and tape. 3,836,090, Cl. 242-68.500.
Miyake, Yuji; Kashiwara, Hideo; and Mizukawa, Jun, to Sanyo Electric Co., Ltd. Vacuum cleaner. 3,835,626, Cl. 55-319.000.
Miyanaka, Motosi: *See*—
Ikegami, Kazutoshi; Yamamoto, Mitsuoki; Toudo, Kenji; and Miyanaka, Motosi, 3,836,316.
Ikegami, Kazutoshi; Honda, Juichi; Miyanaka, Motosi; and Yamamoto, Mitsuoki, 3,836,857.
Miyashita, Junichi, to Kawasaki Jukogyo Kabushiki Kaisha. Vibration absorbing device for rotorcraft. 3,836,098, Cl. 244-17.270.
Mizelle, Ned W., to Hoover-Seng Company. Manually movable headrest for chairs. 3,836,198, Cl. 297-403.000.
Mizikar, David M.: *See*—

Amberger, Ronald F.; and Mizikar, David M., 3,835,696.
Mizukawa, Jun: *See—*
Miyake, Yuji; Kashiwara, Hideo; and Mizukawa, Jun, 3,835,626.
Mobil Oil Corporation: *See—*
Maravetz, Lester L., 3,836,542.
Strubhar, Malcolm K.; and Glenn, Edwin E., Jr., 3,835,928.
Mochizuki, Noritaka: *See—*
Matsumoto, Seiichi; Hosoe, Kuzuya; and Mochizuki, Noritaka, 3,836,919.
Moen, Alfred M.: *See—*
Mongerson, Paul A.; and Moen, Alfred M., 3,835,887.
Moldcast Manufacturing Company: *See—*
Lasker, Martin Lawrence, 3,836,767.
Mole, Michael James: *See—*
Harper, Ronald Ernest; and Mole, Michael James, 3,835,610.
Molinario, Rene, to Molinario S.A. Wigs. 3,835,867, Cl. 132-5.000.
Molinario S.A.: *See—*
Molinario, Rene, 3,835,867.
Moller, Hans Gunter. Toilet assembly. 3,835,477, Cl. 4-9.000.
Molls, Hans-Heinz: *See—*
Telle, Otto; Molls, Hans-Heinz; and Fetting, Karl-Ernst, 3,836,649.
Molnar, George Anthony: *See—*
Von Hardenberg, Paul Warren; and Molnar, George Anthony, 3,836,100.
Molus, Michael R., to Monogram Industries, Inc. Multiple recirculating toilet. 3,835,478, Cl. 4-11.000.
Mondt, James R., to General Motors Corporation. Compact fluid heat exchanger. 3,835,920, Cl. 165-81.000.
Monforts, A.: *See—*
van der Horst, Eberhard, 3,836,210.
Mongerson, Paul A.; and Moen, Alfred M., said Mongerson assor. to Stanadyne, Inc. Valve construction with water modulation. 3,835,887, Cl. 137-625.410.
Monogram Industries, Inc.: *See—*
Molus, Michael R., 3,835,478.
Monsanto Company: *See—*
Barnett, Thomas A., 3,836,426.
Boustany, Kamel; and Coran, Aubert Yaucher, 3,836,412.
Franz, John E., 3,836,572.
Overall, Wilson W.; and De Koning, Joseph G., 3,836,846.
Phillips, Wendell Gary, 3,836,352.
Phillips, Wendell Gary; and Ratts, Kenneth Wayne, 3,836,579.
Monser, George J.; Hardie, George S.; Ehrhardt, John R.; and Smith, Terry M., to Raytheon Company. Closely spaced orthogonal dipole array. 3,836,976, Cl. 343-795.000.
Montgomery, Merlin W. Folding structure. 3,836,418, Cl. 161-17.000.
Moody, David L.; and Loftis, James B., to Joy Manufacturing Company. Drilling apparatus. 3,835,938, Cl. 175-52.000.
Moore, William P., to Bauer Bros., Co., The. Screen units used for dewatering and classifying the contents of a liquid slurry. 3,835,999, Cl. 209-251.000.
Moores, Robert Gordon, Jr.: *See—*
Sides, Daniel Harrison; and Moores, Robert Gordon, Jr., 3,835,935.
Morelli, Franco: *See—*
Lovadina, Armando; and Morelli, Franco, 3,836,856.
Moreno, Frederick E.: *See—*
Kirk, Russell F.; Moreno, Frederick E.; and Foster, Jack D., 3,836,236.
Morgan, Paul Winthrop: *See—*
Gulrich, Leslie W., Jr.; and Morgan, Paul Winthrop, 3,836,498.
Mori, Chiharu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera eyepiece light compensation arrangement. 3,836,921, Cl. 354-31.000.
Mori, Chuzo, to Carl Manufacturing Company. Indexing pointer for list finders. 3,835,560, Cl. 40-104.010.
Mori, Takahisa; and Matsubara, Izuru, to Ezaki Glico Kabushiki Kaisha, Osaka-fu, The and Dai Nippon Printing Company Limited. Carton with two covers. 3,835,989, Cl. 206-45.310.
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsuya, to Nissan Motor Company, Limited. Gear train arrangements. 3,835,732, Cl. 74-688.000.
Morikawa, Yuji: *See—*
Kubota, Satoru; and Morikawa, Yuji, 3,835,687.
Morimoto, Yoshinobu: *See—*
Asano, Tetsumasa; Takamiya, Hiroshi; and Morimoto, Yoshinobu, 3,835,950.
Morisawa, Takao, to Mitsubishi Petrochemical Co., Ltd. Process for preparing shaped product made of inorganic-organic composite material. 3,836,504, Cl. 260-42.550.
Morisue, Mititada: *See—*
Kataoka, Shoei; Hashizume, Nobuo; Tomizawa, Kazutaka; Morisue, Mititada; and Komamiya, Yasuo, 3,836,989.
Mormino, Vittorio: *See—*
Rivola, Luigi; Mormino, Vittorio; and Notari, Bruno, 3,836,436.
Moroz, Ilya Alexandrovich: *See—*
Antonenko, Grigory Semenovich; Badamian, Avetik Artashesovich; Margulis, Grigory Borisovich; Moroz, Ilya Alexandrovich; and Shitsman, Mikhail Borisovich, 3,835,689.
Morrish, William P.: *See—*
Engelhart, John M.; and Morrish, William P., 3,835,481.
Morrison, Glenn C.; and Cetenko, Wiaczeslaw A., to Warner-Lambert Company. 1,2,3,4-Tetrahydro-3-aminomethylisoquinolines. 3,836,536, Cl. 260-286.00r.
Morrison, H. Frank, to University of California, The Regents of the. Electromagnetic device for determining the conductance of a nearby body by a single supercooled inductor coil. 3,836,841, Cl. 324-5.000.
Morse, Lynn H., to OMCO Inc. Safety check valves for gas lines. 3,835,875, Cl. 137-75.000.
Morsell, Arthur Lee: *See—*
Lewis, John Henry; Morsell, Arthur Lee; and Welkowsky, Murray Samuel, 3,836,777.
Morsink, Lucas: *See—*
Van Kamp, Harmen; Westerhof, Pieter; and Morsink, Lucas, 3,836,526.
Moss, Norman Sidney, to Girling Limited. Improvements in or relating to disc brakes. 3,835,960, Cl. 188-71.900.
Motorola, Inc.: *See—*
Arkell, Frank J., 3,836,890.
Olah, Emery E., 3,835,713.
Motoyama, Yukitoshi: *See—*
Saito, Akio; Fukazawa, Kiyohiko; and Motoyama, Yukitoshi, 3,836,264.
Mott, James D., to Hydril Company. Surface controlled float valve and inside blowout preventer drilling tool. 3,835,925, Cl. 166-73.000.
Mounsey, Reginald George. Fishing lure. 3,835,572, Cl. 43-42.060.
Mount, Bruce E., to City of Hope. Impedance plethysmography method and apparatus. 3,835,840, Cl. 128-2.05v.
Mozina, Henry F.; and Blue, Frank L., to Acrometal Products, Inc. Barrel stave reel. 3,836,093, Cl. 242-118.600.
MPC/KurgiSil: *See—*
Goldberg, Edward M.; and Bazell, Seymour, 3,835,863.
Mraz, David M. Wine rack. 3,836,008, Cl. 211-49.00r.
Mrozek, James M., to Brady, W. H., Company. Insert template for a label making machine. 3,836,778, Cl. 250-327.000.
Mueller, Helmut: *See—*
Kelch, Heinz; and Mueller, Helmut, 3,836,072.
Mullenbach, Guy Towns: *See—*
Urry, Wilbert Herbert; and Mullenbach, Guy Towns, 3,836,544.
Muller, Henrik; and Weidner, Peter, to Siemens Aktiengesellschaft. Synchronizing method in time-division multiplex transmission systems. 3,836,722, Cl. 179-15.0bs.
Muller, Jakob: *See—*
Speich, Francisco, 3,835,894.
Muller, Richard, to Gebr. Hofman KG. Wheel balancing apparatus. 3,835,712, Cl. 73-462.000.
Muller, Rudi: *See—*
Kersten, Gunter; Muller, Rudi; and Ray, Franz, 3,835,515.
Munnerlyn, Charles R.; and Trow, William H., to Tropel, Inc. Viewable target system for eye examining instrument. 3,836,238, Cl. 351-36.000.
Murakami, Toshio; and Shibata, Akira, to Hitachi, Ltd. Video signal processing device for extracting the chrominance and luminance signals from a composite video signal in a color television receiver. 3,836,707, Cl. 178-5.40r.
Murata, Kouichiro: *See—*
Watanabe, Tadashi; Murata, Kouichiro; and Tsubouchi, Kenjiro, 3,836,492.
Murata, Masataka: *See—*
Osada, Chiaki; and Murata, Masataka, 3,836,437.
Murphy, John R. B.; and Plett, Edelbert G., to Canada Data Canada, Ltd., mesne. Method and apparatus for determining the thrust of a jet engine. 3,835,701, Cl. 73-117.400.
Murphy, Kevin P.: *See—*
Barton, Oliver A.; and Murphy, Kevin P., 3,836,474.
Murray, Jeremiah J.: *See—*
Ranft, Ernst L.; Paddock, Gordon R.; and Murray, Jeremiah J., 3,835,646.
Muto, Akio: *See—*
Abe, Wataru; Muto, Akio; and Terada, Yasuyuki, 3,836,466.
Myers, Homer S., to Fibrex Corporation. Basting thread with reducing shrinkability and high solvent reactivity and method of producing the same. 3,835,635, Cl. 57-140.00r.
Nabisco, Inc.: *See—*
Hoos, Joseph W.; and Hreschak, Bohdan O., 3,836,683.
NAC Incorporated: *See—*
Takahashi, Masaaki, 3,836,710.
Nachtigal, Chester L.; Hillberry, Benny M.; Goodson, Raymond E.; and Leonard, Robert G., to GLN, Inc. Method and apparatus for the computation of dynamic properties. 3,836,757, Cl. 235-151.300.
Nackmayr, Dietrich: *See—*
Wilisch, Jurgen; Goetze, Rudolf; Jaeck, Frank; Nackmayr, Dietrich; Rehberg, Heinz; and Thuy, Hans-Joachim, 3,836,731.
Nagahiro, Michinori: *See—*
Fukushima, Juichi; and Nagahiro, Michinori, 3,836,096.
Nagel, Erich: *See—*
Koleff, Boris; and Nagel, Erich, 3,836,928.
Steinberger, Siegfried; Pflugbeil, Mathias; Nagel, Erich; Baasner, Wilhelm; Dreher, Karl; Englert, Werner; Ehrengruber, Paul; and Fleck, Adolf, 3,836,060.
Naito, Shun-Ichi. N-Methyl-N'-(2-amino ethyl sulfonyl)-piperazine. 3,836,535, Cl. 260-268.00s.
Nakajima, Takatsugu, to Matsushita Electric Industrial Co., Ltd. Signal-selecting system for a keyboard type electronic musical instrument. 3,836,692, Cl. 84-1.010.
Nakamoto, Soichi: *See—*

Hasegawa, Goro; Nakamoto, Soichi; Takishima, Yoshiyuki; Mashimo, Yukio; Taguchi, Tatsuya; Nakamura, Zenzo; and Taguchi, Tetsuya, 3,836,922.
Nakamura, Shoji; Matsufuji, Akira; Tokushige, Masahiro; and Kato, Kunihiro, to Nippon Steel Corporation and Mitsubishi Electric Corporation. Apparatus for charging materials into vertical heating furnace. 3,836,325, Cl. 432-241.000.
Nakamura, Zenzo: *See—*
Hasegawa, Goro; Nakamoto, Soichi; Takishima, Yoshiyuki; Mashimo, Yukio; Taguchi, Tatsuya; Nakamura, Zenzo; and Taguchi, Tetsuya, 3,836,922.
Nakanishi, Hajime; and Kawashima, Kohei, to Teijin Limited. Process for winding synthetic yarn. 3,835,636, Cl. 57-156.000.
Nakashima, Yoichi: *See—*
Sakamoto, Hisashi; Sasaki, Takeshi; Mikami, Satoshi; and Nakashima, Yoichi, 3,837,002.
Nakatake, Masamichi: *See—*
Yamamoto, Makoto; Fukuda, Tomio; and Nakatake, Masamichi, 3,836,756.
Nalco Chemical Company: *See—*
Payne, Charles C.; and Vossos, Peter H., 3,836,391.
Nash, Alan Richard Brine. Actuators. 3,835,501, Cl. 16-51.000.
Naskar, Sasanka Sekhar; and Renckhoff, Gustav, to Dynamit Nobel Aktiengesellschaft. Process for the lightening and color stabilization of fatty-acid forerunnings. 3,836,554, Cl. 260-419.000.
Nast, Roland: *See—*
Roos, Ernst; Abele, Manfred; Nast, Roland; Kempermann, Theo; and Schubart, Rudiger, 3,836,562.
National Aerospace Laboratory of Science and Technology Agency, The Director of: *See—*
Matsuki, Masakatsu; and Yoshida, Toyoaki, 3,836,283.
National Research Development Corporation: *See—*
Ash, Eric Albert, 3,836,787.
National Research Institute for Metals, The Director of: *See—*
Yoda, Renpei, 3,836,406.
National Semiconductor Corporation: *See—*
Solomon, James E.; and Zias, Arthur R., 3,836,796.
National Starch and Chemical Corporation: *See—*
Skoultchi, Martin; and Meier, Eric A., 3,836,571.
Natter, Bernd: *See—*
Friedel, Rudolf; and Natter, Bernd, 3,836,808.
Naugler, Albert Winston: *See—*
Bruno, Robert Peter; and Naugler, Albert Winston, 3,836,779.
Nederlof, Anton Marie, to U.S. Philips Corporation. Heater for hot-gas engine. 3,835,648, Cl. 60-524.000.
Neelen, Gregorius Theodorus Maria: *See—*
van der Aa, Herman Henricus Maria; van Giessel, Robby; and Neelen, Gregorius Theodorus Maria, 3,835,714.
Negishi, Hideo: *See—*
Yamashita, Junnosuke; and Negishi, Hideo, 3,835,593.
Nehrich, Richard B., Jr.: *See—*
Forber, David K.; and Nehrich, Richard B., Jr., 3,836,782.
Neisch, James C., to Rockwell International Corporation. Brake control system. 3,836,209, Cl. 303-21.00f.
Nemer, Bruce A.: *See—*
Kanter, Yale C.; and Nemer, Bruce A., 3,835,836.
Nercessian, Sarkis, to Forbro Design Corp. Digital to analog converter. 3,836,907, Cl. 340-347.0da.
Nesbit, Alice F. Ring with magnetically secured shim held by adhesively secured member. 3,835,664, Cl. 63-15.600.
Neugroschl, Ernst J., to Goodyear Tire & Rubber Company, The. Tire curing monitoring and control method. 3,836,614, Cl. 264-40.000.
Neumann, Guenter: *See—*
Basu, Prithwis; Neumann, Guenter; and Gaudek, Jani, 3,835,745.
Neville, Dee J.: *See—*
Elazar, Shmuel; and Neville, Dee J., 3,835,704.
Newell Industries, Inc.: *See—*
Hollingsworth, Ashley J., 3,836,094.
Newman, Martin; and Frankel, Alvin L. Air guide and hair brush support device. 3,835,869, Cl. 132-9.000.
NGK Insulators, Ltd.: *See—*
Soejima, Shigeo; and Irokawa, Hideo, 3,836,472.
Nicolet Instrument Corporation: *See—*
Schumann, Robert W., 3,836,851.
Niemeyer, Robert W., to Alco Standard Corporation. Conduit coupling. 3,836,700, Cl. 174-89.000.
Niilola, Armas Kalervo. Cylinder lock. 3,835,677, Cl. 70-216.000.
Niklas, Hans; Knabenbauer, Wolfgang; and Rabenstein, Heinrich, to Varta Aktiengesellschaft. Lead accumulator construction. 3,836,401, Cl. 136-134.00r.
Nintendo Co., Ltd.: *See—*
Sugino, Akira; and Ota, Takao, 3,836,164.
Nippon Electric Kagoshima, Limited: *See—*
Kobayakawa, Masaki; Yawata, Kazufumi; and Yamashita, Shigeru, 3,836,806.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Ichikawa, Kiyoshi, 3,836,693.
Nippon Piston Ring Co., Ltd.: *See—*
Sakamaki, Hiroshi; and Ozeki, Hiroshi, 3,836,296.
Nippon Selfoc Company, Limited: *See—*
Sumimoto, Toru; Matsushita, Shigeo; Fujiware, Tadafumi; Koizumi, Ken; and Yamazaki, Tetsuya, 3,836,348.
Nippon Selfoc Kabushiki Kaisha: *See—*
Ono, Seiichi; Koizumi, Ken; and Yoshiyagawa, Mitsugi, 3,836,347.
Nippon Steel Corporation: *See—*
Nakamura, Shoji; Matsufuji, Akira; Tokushige, Masahiro; and Kato, Kunihiro, 3,836,325.
Nippondenso Co. Ltd.: *See—*
Fujisawa, Hideya, 3,835,820.
Kitano, Akira, 3,836,858.
Nischk, Gunther: *See—*
Radlmann, Eduard; and Nischk, Gunther, 3,836,508.
Nishiguchi, Kazuo: *See—*
Noguchi, Masaaki; Yanagioka, Hiroshi; Kanai, Toshio; Nishiguchi, Kazuo; Hashimoto, Hideo; Abe, Katuhiro; Masuko, Tomio; Mahino, Zenichi; and Kogawa, Yosio, 3,836,630.
Nishimura, Hiroshi: *See—*
Masaki, Kenji; and Nishimura, Hiroshi, 3,835,903.
Nishimura, Takemi: *See—*
Sakamoto, Teruya; Nishimura, Takemi; and Takarada, Osamu, 3,836,011.
Nishizawa, Jun-Ichi, to Semiconductor Research Foundation. Semiconductor with grown layer relieved in lattice strain. 3,836,999, Cl. 357-63.000.
Niskin, Shale J. Power driven block and tackle. 3,836,120, Cl. 254-138.000.
Nissan Motor Company, Limited: *See—*
Endo, Takuya, 3,836,739.
Masaki, Kenji; and Nishimura, Hiroshi, 3,835,903.
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsuya, 3,835,732.
Nitzki, Leopold: *See—*
Vernede, Louis Antoine; Nitzki, Leopold; Liedke, Heinrich; and Schror, Friedrich, 3,835,802.
Noack, Rudolf: *See—*
Lohl, Gunter; Schneider, Wolfgang; Schroder, Heinz; and Noack, Rudolf, 3,836,932.
Noguchi, Masaaki; Yanagioka, Hiroshi; Kanai, Toshio; Nishiguchi, Kazuo; Hashimoto, Hideo; Abe, Katuhiro; Masuko, Tomio; Mahino, Zenichi; and Kogawa, Yosio, to Chiyoda Chemical Engineering & Construction Co., Ltd. Method for treatment of gas containing sulfr dioxide. 3,836,630, Cl. 423-242.000.
Noiles, Douglas G., to United States Surgical Corporation. Self-energizing valve. 3,836,116, Cl. 251-174.000.
Noll, Walter: *See—*
de Montigny, Armand; Schnurrbusch, Karl; Seyfried, Klaus; and Noll, Walter, 3,836,558.
Nonaka, Kohei; Tanaka, Masaho; Maki, Takeshi; Harada, Ikuo; and Hamasaki, Masafumi, to Asahi Kasei Kogyo Kabushiki Kaisha. Personal safety device for use in vehicles. 3,836,168, Cl. 280-150.0ab.
Norco Sales and Manufacturing Company: *See—*
Frye, David, 3,836,879.
Norman, George, & Co. Pty. Ltd.: *See—*
Bini, Rodney James, 3,835,508.
North American Philips Corporation: *See—*
Kok, Pieter W., 3,836,805.
Northcutt, Michael E. Orthodontic onlay and method for exerting corrective traction on an impacted tooth. 3,835,538, Cl. 32-14.00e.
Northwest Microfilm, Inc.: *See—*
Kluver, Dennis A.; and Mehl, Donald N., 3,836,242.
Norton Company: *See—*
Richerson, David W.; and Washburn, Malcolm E., 3,836,374.
Weaver, Gerald Q.; and Olson, Bradford A., 3,836,673.
Norton, James F.; and Creadon, William F., to Hansen Manufacturing Company, The. Coupling assembly. 3,836,114, Cl. 251-149.600.
Notari, Bruno: *See—*
Rivola, Luigi; Mormino, Vittorio; and Notari, Bruno, 3,836,436.
Nouvertne, Werner: *See—*
Bockmann, August; Rudolph, Hans; and Nouvertne, Werner, 3,836,490.
Novello, Frederick C.: *See—*
Baldwin, John J.; and Novello, Frederick C., 3,836,658.
Novy, Anton R., to Great Lakes Carbon Corporation. Process for decoking a delayed coker. 3,836,434, Cl. 201-2.000.
Nowak, Herbert: *See—*
Irmscher, Klaus; Freisberg, Karl-Otto; Orth, Dieter; Nowak, Herbert; and Simane, Zdenek, 3,836,527.
Nowak, Robert M.: *See—*
Brewbaker, James L.; Nowak, Robert M.; and Dennis, Kent S., 3,836,600.
Nukem, G.m.b.H.: *See—*
Hackstein, Karl-Gerhard; Hrovat, Milan; and Wolff, Willi, 3,836,311.
N.V. Koninklijke Pharmaceutische Fabrieken v/h Brocades-Stheeman & Pharmacia: *See—*
Van Der Stelt, Cornflis, 3,836,540.
N.V. Nederlandse Metallindustrie Polynorm: *See—*
Van Wieringen, Gijsbertus L., 3,835,616.
Oak Industries Inc.: *See—*
Golbeck, Bernard J., 3,836,736.
Obermeier, Karl: *See—*
Heuschen, Alexander; Schaefer, Hans; Budich, Wolfgang; Krah, Robert; and Obermeier, Karl, 3,836,274.
Oda, Taizi: *See—*
Masaki, Mitsuo; Uchida, Masaru; Oda, Taizi; and Yamamoto, Koichi, 3,836,525.

O'Farrell, Charles P.; and Serniuk, George E., to Esso Research and Engineering Company. Process for sulfonating unsaturated elastomers. 3,836,511, Cl. 260-79.30r.

Ogilvie Flour Mills Company, Limited, The: *See—*
Hampton, Richard J.; and Bonnell, Brian P., 3,836,376.

Ohara, Sigeo; Toshimura, Fumio; and Sugai, Kazuhiko, to Meisei Electric Co., Ltd. Answering system for PBXs. 3,836,723, Cl. 179-18.0ad.

Ohdan, Kyoji: *See—*
Yamada, Keisho; Umemura, Sumio; Ohdan, Kyoji; and Fukuda, Kazuo, 3,836,586.

Ohtani, Kiyoshi, to Bridgestone Cycle Industry Co. Ltd. Friction piece for bicycle rim brakes. 3,835,963, Cl. 188-73.100.

Ohtsuka, Kunio: *See—*
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsuya, 3,835,732.

Oil-Rite Corporation: *See—*
Gruett, Donald G., 3,835,708.

Oiles Kogyo Kabushiki Kaisha: *See—*
Abe, Wataru; Muto, Akio; and Terada, Yasuyuki, 3,836,466.

Okada, Goro: *See—*
Kobayashi, Hiroshi; and Okada, Goro, 3,836,321.

Okazaki, Nobuo: *See—*
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsuya, 3,835,732.

Okuda, Nobuo; and Kunikyo, Tomoo, to Tokyo Shibaura Electric Company, Ltd. Graphic display having recirculating video memory. 3,836,902, Cl. 340-324.0ad.

Olah, Emery E., to Motorola, Inc. Key slide mechanism for a pushbutton radio receiver. 3,835,713, Cl. 74-10.330.

Oldfather, Charles L.: *See—*
Willis, Roderick M.; and Oldfather, Charles L., 3,836,460.

Oliver, George Albert, to Exec (Proprietary) Limited and AE & CI Limited. Sequential activation of electrical apparatus. 3,836,884, Cl. 337-163.000.

Oliver, John P., to Cameron Iron Works, Inc. Method and apparatus for connecting subsea flow lines. 3,835,655, Cl. 61-72.300.

Olsen, Tinius, Testing Machine Co., Inc.: *See—*
Strimel, Robert S., 3,835,699.

Olson, Bradford A.: *See—*
Weaver, Gerald Q.; and Olson, Bradford A., 3,836,673.

Olson, Eugene D.; and Aiello, Salvatore F., to Loed Corporation, mesne. Material-handling machine. 3,836,025, Cl. 214-77.00r.

Olson, Rich L.; Roland, Murray C.; and Hammond, Clif, to Lockwood Corporation. Monitoring system for mobile irrigation apparatus. 3,836,078, Cl. 239-70.000.

Olson, Robert Dale, to Chicago Musical Instrument Co. Musical instrument. 3,835,748, Cl. 84-388.000.

Olson, Warren E.: *See—*
Ross, William A.; Bach, John W.; and Olson, Warren E., 3,835,779.

Olympia Werke A.G.: *See—*
Behrens, Herbert; and Wohlbier, Gunther, 3,835,976.

Olympus Optical Co., Ltd.: *See—*
Terada, Masaaki, 3,835,841.

OMCO Inc.: *See—*
Hoyt, Richard, 3,835,674.
Morse, Lynn H., 3,835,875.

O'Neill, Edward T.; Brennan, William M.; and Kriechbaum, Gerhard K., to United States of America, Navy. Airfoil camber change system. 3,836,099, Cl. 244-44.000.

Onikov, Eduard Arshakovich: *See—*
Galperin, Alexandr Lvovich; Serebryannikov, Albert Semenovich; Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; Lukoshkov, Vladimir Iosifovich; Lileev, Valeryan Petrovich; Loschilin, Evgeny Dmitrievich; Rutkevich, Zinovy Yakovlevich; Sakharov, oris Alexandrovich; and German, Zinovy Antolievich, 3,835,893.

Onishi, Kazuo: *See—*
Yamashita, Seizi; and Onishi, Kazuo, 3,836,801.

Ono, Seiichi; Koizumi, Ken; and Yoshiyagawa, Mitsugi, to Nippon Selfoc Kabushiki Kaisha. Continuous production of light-conducting glass filaments with refractive index gradient. 3,836,347, Cl. 65-2.000.

Opferkuch, Wilhelm: *See—*
Heinemann, Albert; and Opferkuch, Wilhelm, 3,835,679.

Oppmann, Richard C.: *See—*
Cracraft, Larry F.; Oppmann, Richard C.; and Whitaker, Edward G., 3,836,853.

Opti-Holding A.G.: *See—*
Frohlich, Alfons; and Hochlehnert, Franz, 3,836,413.

Opto Dynetics Inc.: *See—*
Schwartz, Joseph E., 3,836,982.

Orbanic, Robert S.: *See—*
Barre, Wade E.; and Orbanic, Robert S., 3,836,939.

Orchowski, Richard. Water sled. 3,835,492, Cl. 9-6.000.

Orth, Dieter: *See—*
Irmscher, Klaus; Freisberg, Karl-Otto; Orth, Dieter; Nowak, Herbert; and Simane, Zdenek, 3,836,527.

Orthodontic International Services, Inc.: *See—*
Biederman, William, 3,835,540.

Orwoll, Edward Francis: *See—*
Franko-Filipasic, Borivoj Richard; Orwoll, Edward Francis; and Start, John Francis, 3,836,608.

Osada, Chiaki; and Murata, Masataka, to Fuji Photo Film Co., Ltd. Surface treatment for aluminum plates. 3,836,437, Cl. 204-17.000.

Oscar, Joseph. Tile and manufacturing process therefor. 3,835,609, Cl. 52-478.000.

Oshima, Susumu; and Takahashi, Hidetoshi, to Toyoda Koki Kabushiki Kaisha. Apparatus for adjusting the position of a front cover for a grinding wheel guard. 3,835,595, Cl. 51-268.000.

Osinsky, Ulrich; and Althausen, Ferdinand, to Maschinenfabrik Hennecke GmbH. Moulding tool for the manufacture of components of synthetic plastic material. 3,836,110, Cl. 249-79.000.

Ota, Takao: *See—*
Sugino, Akira; and Ota, Takao, 3,836,164.

Otani, Tony U.: *See—*
Saltzman, Gilbert A.; Otani, Tony U.; and Lomax, Donald P., 3,836,341.

Ott, Reinhold A.: *See—*
Davison, Clifford C.; and Ott, Reinhold A., 3,836,158.

Oude Alink, Bernardus A.; Annand, Robert R.; and Redmore, Derek, to Petrolite Corporation. Process of removing sulfur from fluids. 3,835,927, Cl. 166-304.000.

Ovenhausen, Hans-Walter: *See—*
Schreiber, Georg; Schroeder, Heinz; Hoppe, Wolfgang; Hadamovsky, Eugene; Ovenhausen, Hans-Walter; and Piotrowski, Bernhard, 3,836,573.

Overall, Wilson W.; and De Koning, Joseph G., to Monsanto Company. Ice detection apparatus employing microwave reflectance. 3,836,846, Cl. 324-58.50b.

Overbury, Francis Giles, to International Standard Electric Corporation. Commutated antenna array with grating lobe reduction means in a doppler radio navigation beacon system. 3,836,978, Cl. 343-854.000.

Overhead Door Corporation: *See—*
Smith, Vernon O., 3,835,497.

Owens-Corning Fiberglas Corporation: *See—*
Holler, Robert W.; and Rothrock, Richard E., 3,836,689.
Russell, Robert G., 3,835,637.
Stalego, Charles J., 3,836,346.

Owens-Illinois: *See—*
Cooley, Richard F., 3,836,871.

Owens-Illinois, Inc.: *See—*
Cooley, Richard F., 3,836,868.
Cooley, Richard F., 3,836,869.
Cooley, Richard F., 3,836,870.
Ernsthausen, Roger E.; and Emch, Brooke R., 3,836,393.
Miller, James G., 3,836,182.

Oxford Laboratories: *See—*
James, Gerald E., 3,836,332.

Oxirane Corporation: *See—*
Denigan, Edward P., Jr.; and Ballard, Donnell A., 3,835,930.

Oxy Metal Finishing Corporation, mesne: *See—*
Jones, Frederick W. C., 3,836,467.

Ozark-Mahoning Company: *See—*
Douglas, Clarence J.; Young, Walter L.; and Phillips, Jack H., 3,835,909.

Ozeki, Hiroshi: *See—*
Sakamaki, Hiroshi; and Ozeki, Hiroshi, 3,836,296.

P & O Research & Development Company: *See—*
Stansfield, Fred, 3,835,523.

Packard, James R.: *See—*
Strehlow, Wolfgang H.; Lee, Pui Kum; and Packard, James R., 3,836,224.

PACO Packaging, Inc.: *See—*
Haines, Russell R., 3,835,995.

Paddock, Gordon R.: *See—*
Ranft, Ernst L.; Paddock, Gordon R.; and Murray, Jeremiah J., 3,835,646.

Padula, Arthur H.; Meyer, William G.; and Hollowell, John V., to American National Housing Corporation. Housing package designed to be conveyed by one vehicle. 3,835,600, Cl. 52-67.000.

Paige, George Sydney: *See—*
Marshall, Frank Graham; and Paige, George Sydney, 3,836,876.

Paine, Derrick, Jr.; and Paine, Thomas. Basket protective cover. 3,836,040, Cl. 220-60.00r.

Paine, Thomas: *See—*
Paine, Derrick, Jr.; and Paine, Thomas, 3,836,040.

Palopoli, Frank D.: *See—*
Bausenbach, Arthur E.; Seiple, Richard T.; and Palopoli, Frank D., 3,836,123.

Panaretos, Alexander M: :hael. Base for footwear contributing to comfortable and graceful walking. 3,835,556, Cl. 36-33.000.

Panicali, Marcello. Valve cap. 3,836,117, Cl. 251-351.000.

Pantex Corporation: *See—*
Pao, John; Wang, Raymond; Takashima, Ben Tsutomu; Pon, Chuck Y.; and Kanetake, Thomas T., 3,836,959.

Pao, John; Wang, Raymond; Takashima, Ben Tsutomu; Pon, Chuck Y.; and Kanetake, Thomas T., to Pantex Corporation. Apparatus for activating remotely located devices in response to acoustical signals. 3,836,959, Cl. 340-148.000.

Papeleux, Paul: *See—*
Flipot, Alfred-Jean; Papeleux, Paul; and LaFontaine, Ivan, 3,836,431.

Papineau, Milton D.: *See—*
Geren, Keith E.; Papineau, Milton D.; and Routh, Claude C., 3,836,951.

Paraskeva, Theophanis: *See—*
Melachrinos, Basil D., 3,836,330.

Parker, Earl R.; and Zackey, Victor F., to United States of America, Atomic Energy Commission. High strength and high toughness alloy. 3,836,407, Cl. 148-142.000.

Parker, Rollin James, to General Electric Company. Permanent magnet motor. 3,836,802, Cl. 310-154.000.

Partridge, Frank Bernard Roy, to Australia, Commonwealth of; c/o the Department of Civil Aviation. Apparatus for tracking a luminous object. 3,836,259, Cl. 356-152.000.

Pasch, Lambert; and Wagemann, Heinz, to Uniroyal A.G. Transfer molding apparatus. 3,836,306, Cl. 425-251.000.

Pass, Raymond Vincent, to AMP Incorporated. Magnetic card reader. 3,836,753, Cl. 235-61.lld.

Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH: *See—*
Lukas, Josef, 3,836,317.

Patrick, Ralph E.: *See—*
Kovach, Stephen M.; Patrick, Ralph E.; and Kmecak, Ronald A., 3,836,453.

Patterson, Leland W.: *See—*
Krawitz, Leonard; Maslyk, Frank J.; and Patterson, Leland W., 3,836,344.

Paucksch, Heinrich; Massonne, Joachim; and Derleth, Helmuth, to Kali-Chemie Aktiengesellschaft. Shaped hydrofluorination catalyst and process of making the same. 3,836,479, Cl. 252-433.000.

Paul, John M.; Heisler, William C.; and Else, George W., to Budd Company, The. Electrically insulated railway car truck. 3,835,788, Cl. 105-182.00e.

Payne, Charles C.; and Vossos, Peter H., to Nalco Chemical Company. Process for improving the antislip properties of a cellulosic surface. 3,836,391, Cl. 117-152.000.

Payne, Michael Ian; and Mazgy, James Dimitri, to RCA Corporation. Apparatus for testing the linearity of a circuit by using a staircase waveform and ratio determining means. 3,836,845, Cl. 324-57.0ps.

Peek, Sandford C. Human pulse rate measuring apparatus. 3,835,837, Cl. 128-2.05p.

Pehr, Harold T. Pivoted closure condiment dispenser. 3,836,056, Cl. 222-480.000.

Peilstocker, Gunter: *See—*
Schirmar, Hermann; and Peilstocker, Gunter, 3,836,499.

Pemberton, J. C. Hydraulically controlled non-slip differential. 3,835,730, Cl. 74-650.000.

Pennant Display & Engineering Limited: *See—*
Henderson, David Alexander Whyte; and Crawford, Brian Thomas, 3,836,240.

Penniman, Robert; and Snelling, Richard A., to Barreca Products Co. Mounting rack for skis or the like. 3,836,058, Cl. 224-42.10f.

Penzien, Klaus: *See—*
Jun, Mong-Jon; Penzien, Klaus; and Wegner, Gerhard, 3,836,368.

Pepi, Jerome S.: *See—*
Lowe, Russell T.; Pepi, Jerome S.; and Schubert, Dale W., 3,836,134.

Perdue, Richard Russell, to Grace, W. R., & Co. Apparatus for producing vacuum skin packages in multiples. 3,835,618, Cl. 53-112.00a.

Perelmutr, Alexandr Semenovich; Berlin, Alexandr Zinovievich; Gorlin, Igor Konstantinovich; and Traxler, Alexandr Gustavovich. Evaporator for liquid anesthetics. 3,836,129, Cl. 261-47.000.

Perkin-Elmer Corporation, The: *See—*
Peters, William N., 3,836,256.

Perper, Timothy P.: *See—*
McNamara, Thomas F.; and Perper, Timothy P., 3,836,396.

Perronnet, Jacques; and Girault, Pierre, to Roussel-UCLAF. Carbamaldoximes. 3,836,582, Cl. 260-566.0ac.

Persson, Jan Edvard: *See—*
Lagerstedt, John Arne; and Persson, Jan Edvard, 3,835,936.

Pertchik, Samuel: *See—*
Sagi, Zsigmond L.; Comer, Robert C.; Andersen, Norman; Burtha, John R.; and Pertchik, Samuel, 3,835,990.

Peters, William N., to Perkin-Elmer Corporation, The. Interferometer for testing telescope optics. 3,836,256, Cl. 356-109.000.

Peterson, Per-Erik Arnold, to Rederiaktiebolaget Nordstjernan. Method of transporting ship cargo. 3,836,026, Cl. 214-152.000.

Peterson, Robert A. Refuse compactor. 3,835,767, Cl. 100-53.000.

Peterson, Robert A. Refuse compactor. 3,835,769, Cl. 100-227.000.

Peterson, William H.; and Bochenek, Valerian S., Jr., to Pullman Incorporated. Closure mechanism for bottom dump hopper car doors. 3,836,023, Cl. 214-63.000.

Petitto, Albert C., to Foster Grant Co., Inc. Nestable container. 3,836,042, Cl. 206-519.000.

Petrillo, Richard J., to Gillette Company, The. Package for razor blade unit. 3,835,532, Cl. 30-40.200.

Petrolite Corporation: *See—*
Oude Alink, Bernardus A.; Annand, Robert R.; and Redmore, Derek, 3,835,927.
Shoberg, Ralph A.; and Cravens, Paul E., 3,836,459.

Petrukhno, Anatoly Semenovich: *See—*
Skornyakov, Jury Pavlovich; Tjutjunnikov, Jury Borisovich; Petrukhno, Anatoly Semenovich; and Schelkunov, Filipp Savelievich, 3,836,435.

Peytavin, Pierre; and Babel, Louis, to Societe Civile d'Etudes de Centrifugation. Method and apparatus for cutting into sections the castings produced by a continuous rotary casting machine. 3,835,740, Cl. 82-47.000.

Pfenning, Gerald E.: *See—*
Albers, James C.; Pfenning, Gerald E.; and Anderson, Adrain P., 3,835,924.

Pfister, Ernst, to Schneeberger, W., AG. Revolving roller bearing arrangement. 3,836,211, Cl. 308-6.000.

Pfizer Inc.: *See—*
Duhy, Kenneth W.; and Jones, John, Jr., 3,836,045.

Pflugbell, Mathias: *See—*
Steinberger, Siegfried; Pflugbell, Mathias; Nagel, Erich; Baasner, Wilhelm; Dreher, Karl; Englert, Werner; Ehrengruber, Paul; and Fleck, Adolf, 3,836,060.

Phenomenon Productions, Inc.: *See—*
Roccanova, Frank A., 3,835,871.

Philco-Ford Corporation: *See—*
Franck, Howard S., 3,835,660.

Philip, Charles R. Motorized fishing device. 3,835,570, Cl. 43-19.200.

Phillips, Jack H.: *See—*
Douglas, Clarence J.; Young, Walter L.; and Phillips, Jack H., 3,835,909.

Phillips Petroleum Company: *See—*
Henderson, Eulas W., 3,835,622.
Reusser, Robert E., 3,836,480.

Phillips, Wendell Gary, to Monsanto Company. Herbicidal method utilizing N substituted heterocyclic compounds. 3,836,352, Cl. 71-94.000.

Phillips, Wendell Gary; and Ratts, Kenneth Wayne, to Monsanto Company. Certain substituted carbamoyl thioformyl chlorides. 3,836,579, Cl. 260-543.00r.

Phillipson, Phillip William: *See—*
Gould, Jay W., III; and Phillipson, Phillip William, 3,835,569.

Photo Production Plastics, Inc.: *See—*
Hotchkiss, Kenneth W.; and Byers, Gerald S., 3,836,826.

Piccone, Dante E.; Somos, Istvan; and McIntyre, James E., to General Electric Company. Thyristor overvoltage protective element. 3,836,994, Cl. 357-38.000.

Pierce, Wayne M., Jr. Cable winch. 3,836,122, Cl. 254-172.000.

Pigeaud, Jean-Marie: *See—*
Sartre, Bernard; Pigeaud, Jean-Marie; and Masure, Daniel, 3,836,438.

Pilarczyk, Karol, to Carrier Corporation. Compressor base and intercoolers. 3,835,918, Cl. 165-47.000.

Piller, Bohumil; Lacko, Vladimir; Kochta, Zdenek; and Koudelka, Bedrich, to Vyzkumny Ustav Pletarsky. Method of producing relief patterned nonwoven textiles. 3,835,512, Cl. 28-72.0ft.

Pimiskern, Klaus: *See—*
Hepp, Wolfgang; Pimiskern, Klaus; and Herbert, Werner, 3,836,212.

Piotrowski, Bernhard: *See—*
Schreiber, Georg; Schroeder, Heinz; Hoppe, Wolfgang; Hadamovsky, Eugene; Ovenhausen, Hans-Walter; and Piotrowski, Bernhard, 3,836,573.

Pitcher, Robert Hazell: *See—*
Bainbridge, Wilfred Nicholas; and Pitcher, Robert Hazell, 3,836,166.

Pitney-Bowes, Inc.: *See—*
Ross, William A.; Bach, John W.; and Olson, Warren E., 3,835,779.

Pitt, Harold M., to Stauffer Chemical Company. Preparation of esters of thiocarbamic acids. 3,836,524, Cl. 260-239.0bf.

Planck, Alfred, Jr.: *See—*
Schiebel, Alfred; Kuhn, Falk; Beuter, Hermann; and Planck, Alfred, Jr., 3,835,668.

Platell, Ove Bertil, to Saab-Scania Aktiebolag. Heat exchanger for fluid media having unequal surface conductances. 3,835,923, Cl. 165-179.000.

Platzoeder, Karl; Martin, Heinz; and Emeis, Reimer, to Siemens Aktiengesellschaft. Semiconductor device having a silver layer in pressure contact with the device surface. 3,837,000, Cl. 357-65.000.

Platzoeder, Karl; Martin, Heinz; and Emeis, Reimer, to Siemens Aktiengesellschaft. Semiconductor device having a silver layer in pressure contact with the device surface. 38,367,000, Cl. 357-65.000.

Plempel, Manfred: *See—*
Regel, Erik K.; Buchel, Karl-Heinz; and Plempel, Manfred, 3,836,663.
Regel, Erik K.; Buchel, Karl-Heinz; and Plempel, Manfred, 3,836,664.

Plessers, Hendrik Sylvester: *See—*
Stievenart, Emile Frans; Van Bouwel, Leo Paul; and Plessers, Hendrik Sylvester, 3,836,783.

Plessey Handel und Investments A.G.: *See—*
Marsh, Anthony, 3,836,897.
Shepherd, Robert, 3,835,830.

Plett, Edelbert G.: *See—*
Murphy, John R. B.; and Plett, Edelbert G., 3,835,701.

Plohn, Gerhard: *See—*
Schonfeld, Peter; Borgmann, Heinz; and Plohn, Gerhard, 3,836,822.

Plummer, Walter A. Means for sealing and protecting a cable splice. 3,836,702, Cl. 174-93.000.

Plummer, William T., to Polaroid Corporation. Eye lens in a single lens reflex camera viewfinder providing field tilt compensation. 3,836,931, Cl. 354-155.000.

Plutchak, Thomas Miles, to Eastman Kodak Company. Color electrophotography using a photoconductive layer on both sides of a multicolor screen. 3,836,363, Cl. 96-1.200.

Pneumo Dynamics Corporation: *See—*
Meulendyk, John W., 3,836,074.
Podesta, Armando. Closure cap. 3,836,033, Cl. 215-7.000.
Poe, Harvey C.: *See—*
Kelley, Arnetta B.; and Poe, Harvey C., 3,835,575.
Pogorski, Louis August. Geo-chemical exploration method. 3,835,710, Cl. 73-421.50r.
Polaroid Corporation: *See—*
Ellin, Seymour, 3,836,930.
Plummer, William T., 3,836,931.
Reid, Jerome L., 3,836,365.
Polata, Bohumil: *See—*
Kocsis, Joseph; and Polata, Bohumil, 3,836,998.
Poletto, John Frank: *See—*
Bernady, Karel Francis; Poletto, John Frank; and Weiss, Martin Joseph, 3,836,581.
Pollack, William, to Westinghouse Electric Corporation. Method of making laminated diffusion bonded battery plaques. 3,835,514, Cl. 29-2.000.
Pollheide, Dieter: *See—*
Hagemann, Hermann; Wingler, Frank; and Pollheide, Dieter, 3,836,604.
Polney, Richard J.: *See—*
Schrader, Victor H.; Polney, Richard J.; and Vermilyea, Peter W., 3,835,511.
Poly-San Corporation: *See—*
Harding, George W., 3,835,480.
Polydoris, Nicholas G.; and Wollar, Burnell J., to ENM Company. Measuring instrument. 3,835,543, Cl. 33-141.00e.
Pomerance, Joseph B.; and Burke, Jesse Haywood. Bicycle for two. 3,836,175, Cl. 280-209.000.
Pomper, William J.; Wilhelm, Charles G.; and Yancey, Leonard M., to United States of America, Navy. Digital voice detector. 3,836,714, Cl. 179-1.0sd.
Pon, Chuck Y.: *See—*
Pao, John; Wang, Raymond; Takashima, Ben Tsutomu; Pon, Chuck Y.; and Kanetake, Thomas T., 3,836,959.
Pontecorvo, Nicholas E. Method and apparatus for preparation of ricotta cheese. 3,836,684, Cl. 426-361.000.
Pooley, Donald Humphrey: *See—*
Braggins, George Roderick Derham; and Pooley, Donald Humphrey, 3,835,973.
Popov Alfred Nikolaevich: *See—*
Sakharnov, Vasily Alexeevich; Popov Alfred Nikolaevich; Tishura, Vladimir Ivanovich; Galyan, Boris Afanasievich; and Skulsky, Jury Valentinovich, 3,836,746.
Port, Darrell P.: *See—*
Egan, Dale W.; Holstrom, Geoffrey B.; Lord, Harry C.; Stevens, Robert W.; Port, Darrell P.; and Howard, Rolien D., 3,836,237.
Porta-Tool, Incorporated: *See—*
Brooks, Daryl G., 3,836,277.
Portnoy, William M.; Waters, Warren P.; and Wisman, Emery C., to Texas Instruments, Incorporated. Semiconductor device having epitaxial region of predetermined thickness. 3,836,991, Cl. 357-15.000.
Potoski, John R.: *See—*
Freed, Meier E.; and Potoski, John R., 3,836,670.
Potter, James L.: *See—*
Pruitt, Ronnie, M.; and Potter, James L., 3,836,488.
Potter, Richard C.: *See—*
Smith, Ronald S.; Kuderna, Jerome G., Jr.; and Potter, Richard C., 3,836,638.
PPG Industries, Inc.: *See—*
Dean, Warren E.; and Makris, William E., 3,836,442.
Du Bois, Donald W., 3,836,410.
Knavish, Leonard A., 3,836,349.
Precision Metalsmith, Inc.: *See—*
Horton, Robert A., 3,836,372.
Prefsman, Vladimir Alexandrovich: *See—*
Gutman, Anatoly Lvovich; Prefsman, Vladimir Alexandrovich; Abramov, Leonid Mikhailovich; and Shokurov, Jury Stepanovich, 3,836,273.
Presciencia, Limited: *See—*
Yaeger, Luther LeMasters, 3,836,417.
Preti, Jean-Claude, to Societe De Fabrication D'Instruments De Mesure (S.F.I.M.). Method and apparatus for the detection of a presence. 3,836,965, Cl. 343-8.000.
Prince, Arthur E., Jr., to Celanese Corporation. Process for the hot drawing of polybenzimidazole fibrous materials wherein a heated draw surface is employed. 3,836,621, Cl. 264-210.00f.
Princeton Applied Research Corporation: *See—*
Ridgway, Stuart L., 3,836,775.
Procter & Gamble Company, The: *See—*
Riemersma, Coenraad E., 3,836,089.
Prokai, Bela, to Union Carbide Corporation. Cationic silicones. 3,836,559, Cl. 260-448.20n.
Prokai, Bela; and Kanner, Bernard, to Union Carbide Corporation. Organosilicone polymers. 3,836,560, Cl. 260-448.80r.
Prolizenz AG: *See—*
Gyongyos, Ivan, 3,835,917.
Prosser, Walter L., to Langsenkamp, F. H., Company. Method and apparatus for obtaining tomato juice while minimizing enzymic action. 3,835,763, Cl. 99-495.000.
Pruett, George R., to Texas Instruments Incorporated. Photovoltaic diode with first impurity of Cu and second of Cd, Zn, or Hg. 3,836,399, Cl. 136-89.000.
Prugh, Richard W. Safety tester for electrical appliances and receptacles. 3,836,844, Cl. 324-51.000.
Pruitt, Ronnie, M.; and Potter, James L., to Dow Chemical Company, The. Tris (2-dimethylamino)ethyl/ amine as catalyst for the preparations of polyurethanes. 3,836,488, Cl. 260-2.5ac.
Pullman Incorporated: *See—*
Peterson, William H.; and Bochenek, Valerian S., Jr., 3,836,023.
Purification Sciences Inc.: *See—*
Lowther, Frank E., 3,836,786.
Purtell, Rufus J., to Tri-Matic, Inc. Water regulator and power governor. 3,836,285, Cl. 417-34.000.
Purtle, Homer, Jr. Navigation data computation apparatus. 3,836,690, Cl. 35-10.200.
Pyka, John P.; and Pyka, Robert J. Door spring anchoring means. 3,836,133, Cl. 267-69.000.
Pyka, Robert J.: *See—*
Pyka, John P.; and Pyka, Robert J., 3,836,133.
Pyke, James B., to Goodyear Tire & Rubber Company, The. Polymerization of conjugated diolefins with alfin catalyst and molecular weight controller. 3,836,513, Cl. 260-82.100.
Pyronics, Inc.: *See—*
Shular, Howard Edward, 3,836,315.
Quaker Oats Company, The: *See—*
Briendell, Gordon D.; and Wuskell, Joseph P., 3,836,590.
Quality Pool Supply Co.: *See—*
Engelhart, John M.; and Morrish, William P., 3,835,481.
Quattlebaum, Walter J.: *See—*
Young, William O., Jr.; Surka, Ebun A.; and Quattlebaum, Walter J., 3,835,746.
Quebedeaux, Bruno, Jr.: *See—*
Fawzi, Maged M.; and Quebedeaux, Bruno, Jr., 3,836,350.
Raaber, Norbert. Reinforced girders of steel and concrete. 3,835,607, Cl. 52-223.000.
Rabenstein, Heinrich: *See—*
Niklas, Hans; Knabenbauer, Wolfgang; and Rabenstein, Heinrich, 3,836,401.
Rademachers, Jakob: *See—*
Hahnkamm, Volker; Rademachers, Jakob; Henkel, Hanno; Brandle, Karl; and Schafer, Kurt, 3,836,378.
Radford, Colin M., to Filtaflo (Proprietary) Limited. Filter elements. 3,836,002, Cl. 210-232.000.
Radli, Bruce A.: *See—*
Miller, Ronald H.; and Radli, Bruce A., 3,836,104.
Radlmann, Eduard; and Nischk, Gunther, to Bayer Aktiengesellschaft. Sulfobenzylmalonic acid modified terephthalic acid polyesters. 3,836,508, Cl. 260-75.00s.
Radloff, Harry John, to GTE Sylvania Incorporated. Voltage regulator with saturation protection. 3,836,840, Cl. 323-22.00t.
Radloff, Harry L.: *See—*
Seiferth, Oscar E.; Goller, Robert L.; Grindrod, Paul E.; and Radloff, Harry L., 3,836,679.
Radscheit, Kurt: *See—*
Stache, Ulrich; Haede, Werner; Fritsch, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,836,520.
Rafael, Werner, to Gewerkschaft Eisenhutte Westfalia. Frame assemblies for use with scraper-chain conveyors. 3,835,981, Cl. 198-204.000.
Rambaud, Michel, to Etablissements Gatineau S.A. Device for the sterilization of food products in flexible packages. 3,835,762, Cl. 99-483.000.
Rameil, Jean, to International Contacts Inventors Anstalt. Apparatus for detecting cardiovascular diseases. 3,835,838, Cl. 128-2.05p.
Ramsey, Raymond Bolton: *See—*
Gressitt, Tillman Johnson; Koliss, Peter Paul; and Ramsey, Raymond Bolton, 3,836,696.
Ranft, Ernst L.; Paddock, Gordon R.; and Murray, Jeremiah J., to General Motors Corporation. Air flow control unit. 3,835,646, Cl. 60-290.000.
Rank Organisation Limited, The: *See—*
Farnsworth, John Leonard, 3,836,234.
Rapid-American Corporation, mesne: *See—*
Tilp, Robert F.; Fitzpatrick, William E.; and Cubitt, Robert B., 3,836,044.
Rasor Associates, Inc., mesne: *See—*
Rasor, Ned S.; and Spickler, Joseph William, 3,835,864.
Rasor, Ned S.; and Spickler, Joseph William, to Rasor Associates, Inc., mesne. Intra-cardiac stimulator. 3,835,864, Cl. 128-419.00p.
Raths, Rudolf, to Chocoladefabriken Lindt & Sprungli Aktiengesellschaft. Heat exchanger for fluent masses. 3,835,922, Cl. 165-94.000.
Ratts, Kenneth Wayne: *See—*
Phillips, Wendell Gary; and Ratts, Kenneth Wayne, 3,836,579.
Rau, Eric: *See—*
Ilardi, Joseph M.; and Rau, Eric, 3,836,628.
Rauhut, Paul, to Brown Boveri & Company Ltd. Phase converter. 3,836,837, Cl. 321-55.000.
Ravenis, Joseph V. J.: *See—*
Gehman, John B.; and Ravenis, Joseph V. J., 3,836,960.
Ray, Franz: *See—*
Kersten, Gunter; Muller, Rudi; and Ray, Franz, 3,835,515.
Raytheon Company: *See—*

Chambers, Derek, 3,836,813.
Monser, George J.; Hardie, George S.; Ehrhardt, John R.; and Smith, Terry M., 3,836,976.
Tiefert, Karl H., 3,836,446.
RCA Corporation: *See—*
Bond, Donald Spencer; and Holman, John Michael Leigh, 3,836,969.
Einthoven, Willem Gerard; Schilp, William Henry; and Todd, Albert Alexander, 3,836,997.
Hall, William Bernard; and Koskulitz, Joseph Allen, 3,836,825.
Payne, Michael Ian; and Mazgy, James Dimitri, 3,836,845.
Schilp, William Henry; and Todd, Albert Alexander, 3,836,996.
Wheatley, Carl Franklin, Jr.; and Einthoven, Willem Gerard, 3,836,995.
Rederiaktiebolaget Nordstjernan: *See—*
Peterson, Per-Erik Arnold, 3,836,026.
Redfern, Calvin E., to Allis-Chalmers Corporation. Positive blade rotation arrangement for disconnect switch. 3,836,737, Cl. 200-48.001.
Redhead, David L.: *See—*
Koehler, Helmut A.; Redhead, David L.; and Clough, George A., 3,836,865.
Redmore, Derek: *See—*
Oude Alink, Bernardus A.; Annand, Robert R.; and Redmore, Derek, 3,835,927.
Reed, Alston L. Reciprocating feeder. 3,835,984, Cl. 198-220.0ba.
Reed, Frank L.: *See—*
Trent, Lamartine C.; and Reed, Frank L., 3,836,143.
Reed, Samuel M. Drive-in speaker installation. 3,836,716, Cl. 179-1.0dd.
Reed, William A.: *See—*
Roblin, John M.; Cole, Frank J.; and Reed, William A., 3,836,387.
Regel, Erik K.; Buchel, Karl-Heinz; and Plempel, Manfred, to Bayer Aktiengesellschaft. N-tritylimidazoles as antifungal agents. 3,836,663, Cl. 424-273.000.
Regel, Erik K.; Buchel, Karl-Heinz; and Plempel, Manfred, to Bayer Aktiengesellschaft. N-tritylimidazoles as antifungal agents. 3,836,664, Cl. 424-273.000.
Register Systems GmbH: *See—*
Bock, Erich, 3,835,778.
Reh, Lothar; Bohm, Eberhard; and Schoene, Gunter, to Metallgesellschaft Aktiengesellschaft. Process for producing aluminum fluoride. 3,836,635, Cl. 423-489.000.
Rehberg, Heinz: *See—*
Wilisch, Jurgen; Goetze, Rudolf; Jaeck, Frank; Nackmayr, Dietrich; Rehberg, Heinz; and Thuy, Hans-Joachim, 3,836,731.
Reid, Jerome L., to Polaroid Corporation. Novel photographic products and processes. 3,836,365, Cl. 96-3.000.
Reifenschweiler, Otto, to U. S. Philips Corporation. Neutron generator having a target on which a beam of hydrogen ions is incident. 3,836,785, Cl. 250-501.000.
Reisman, Howard. Apparatus for assembling tubular cartons. 3,835,619, Cl. 53-138.00r.
Reitzig, Rafeal, to Siemens Aktiengesellschaft. Antenna array for aircraft navigation system. 3,836,970, Cl. 343-100.0st.
Rekesius, John F., to Savory Equipment, Inc. Apparatus for toasting bread-like articles. 3,835,760, Cl. 99-331.000.
Remington Arms Company, Inc.: *See—*
Curran, Roger J., 3,835,783.
Renckhoff, Gustav: *See—*
Naskar, Sasanka Sekhar; and Renckhoff, Gustav, 3,836,554.
Reni, Cesare; Lugo, Luigi; and Gualdi, Giorgio, to Societa Italiana Resine S.p.A. Method of producing cumene hydroperoxide. 3,836,588, Cl. 260-610.00b.
Republic of France; as represented by State Minister charged with National Defence Delegation Ministerielle pour l'Armement, Bureau des Prevets et Inventions: *See—*
David, Pierre Yvon; and Martin, Gilbert Marius, 3,835,801.
Republic Steel Corporation: *See—*
Roblin, John M.; Cole, Frank J.; and Reed, William A., 3,836,387.
Thomas, Jerry D.; and Griffith, Cecil B., 3,836,359.
Research Engineering & Manufacturing, Inc.: *See—*
Wardwell, Charles H.; and Holcomb, Norman L., 3,836,743.
Research Enterprises, Inc.: *See—*
Kirton, Joseph Mason; and Southwick, J. Wanless, 3,835,553.
Retali, Roger; Chielens, Alain; and Boussekey, Bernard, to Fives Lille Cail. Support for tubular rotary kiln. 3,836,103, Cl. 248-130.000.
Reusser, Robert E., to Phillips Petroleum Company. Conversion of olefins. 3,836,480, Cl. 252-439.000.
Revill, Howard B., to USM Corporation. Insole and method of making same. 3,835,558, Cl. 36-44.000.
Reymore, Harold E., Jr.; Sayigh, Adnan A. R.; and Grieve, Robin L. Polyisocyanurate foam articles. 3,836,424, Cl. 161-159.000.
Reynolds Metals Company: *See—*
Beauvais, Max P.; and Breil, Jacques, 3,836,328.
Cidzik, Daniel F., 3,836,038.
Rhone- Poulenc S.A.: *See—*
Boesch, Roger, 3,836,539.
Rhone-Poulenc S.A.: *See—*
Bargain, Michel, 3,836,489.
Rhone-Progil: *See—*
Bouniot, Albert, 3,836,575.
Bouy, Pierre; and Collard, Daniel, 3,836,448.
Falize, Claude; and Bouniot, Albert, 3,836,576.
Sartre, Bernard; Pigeaud, Jean-Marie; and Masure, Daniel, 3,836,438.
Trebillon, Emile; and Wetroff, Georges, 3,836,515.
Rhudy, John S.; and Davis, John A., Jr., to Marathon Oil Company. Composition useful as a fluid loss control agent. 3,836,465, Cl. 252-8.50c.
Rhyne, Johnathan L., 20% to Rhyne, Paul C., Jr. and 20% to Rhyne, Joseph M. Method of making novelty yarn. 3,835,639, Cl. 57-156.000.
Rhyne, Joseph M.: *See—*
Rhyne, Johnathan L., 3,835,639.
Rhyne, Paul C., Jr.: *See—*
Rhyne, Johnathan L., 3,835,639.
Rice, Robert D. Power propulsion means for boats. 3,835,806, Cl. 115-12.00r.
Richards, John O. Rope holding device. 3,835,507, Cl. 24-134.00r.
Richards, Lawrence I., to Autoquip Corporation. Deflection safety control for platform of vertical rising lift. 3,835,957, Cl. 182-19.000.
Richardson, Deane W.: *See—*
Hewitt, John H.; and Richardson, Deane W., 3,835,977.
Richardson Merrell Inc.: *See—*
Grisar, Johann Martin; and Richardson Merrell Inc., 3,836,543.
Richardson-Merrell Inc.: *See—*
Thompson, Ronald J.; and MacKenzie, Robert D., 3,835,835.
Richco Plastic Company: *See—*
Coules, Ronald A., 3,836,703.
Coules, Ronald A., 3,836,704.
Richerson, David W.; and Washburn, Malcolm E., to Norton Company. Hot pressed silicon nitride. 3,836,374, Cl. 106-55.000.
Ricker, Ernst; Sander, Bruno; Schmidt, Franz; Schwartz, Erich; Sperber, Heinrich; and Wilhelm, Hans, to Badische Anilin-& Soda-Fabrik Aktiengesellschaft. Polycondensates of diamides, n,n'-ureas and formaldehyde admixed with oxymethylene polymers. 3,836,605 Cl. 260-849.000.
Rickert, Glenn E. Reflex sight having a frequency selective collinating beam combining mirror. 3,836,263, Cl. 356-251.000.
Ridgway, Stuart L., to Princeton Applied Research Corporation. Electron impact spectrometer of high sensitivity and large helium tolerance and process of characterizing gaseous atoms and molecules by the energy loss spectrum. 3,836,775, Cl. 250-305.000.
Riegel Textile Corporation: *See—*
Terry, Roy P., Jr.; Teed, Richard K.; and Shirer, S. Ross, 3,836,421.
Rieger, Hans Wolfhart: *See—*
Kugler, Tibor; and Rieger, Hans Wolfhart, 3,836,394.
Rieger, Hansjorg; and Weidler, Erhard Alfred. Link element for chains. 3,835,908, Cl. 152-243.000.
Riemersma, Coenraad E., to Procter & Gamble Company, The. Web splicing, unwinding and forwarding apparatus. 3,836,089, Cl. 242-58.100.
Riera, Juan Colome: *See—*
Batlles, Jorge Ferrer; Salat, Carlos Ferrar; and Riera, Juan Colome, 3,836,668.
Rietveld, Andreas Fredericus: *See—*
Keimpema, Keimpe Klaas; Van der Veen, Marcus Fokke; Rietveld, Andreas Fredericus; and Schoo, Jan Andreas, 3,835,551.
Rietzler, Rudolf, to Schulten, Franz, Weberei-und Bekleidungs-Werke. Nipping-shuttle for weaving. 3,835,877, Cl. 139-207.000.
Rieve, Robert W.: *See—*
Connor, James E., Jr.; Rieve, Robert W.; and Shalit, Harold, 3,836,603.
Rifkin, Alfred Aaron, to International Business Machines Corporation. Non-volatile magnetic domain device having binary valued bias field excitation. 3,836,896, Cl. 340-174.0tf.
Riggers Manufacturing Company: *See—*
Lampson, Neil F., 3,836,010.
Rigotte, Victor H.: *See—*
Boenke, Clyde O.; Miller, Murray H.; Levine, Michael R.; Rigotte, Victor H.; Vivian, Weston E.; and Hall, William C., 3,836,888.
Rike, Russell E.: *See—*
Troester, Thomas F.; and Rike, Russell E., 3,835,961.
Riken Light Metal Industries, Co., Ltd.: *See—*
Ikegaya, Masashi; and Shigeta, Fumio, 3,836,439.
Rishovd, Sigurd A., to Royal Industries, Inc. Torsion bar gauge. 3,835,547, Cl. 33-347.000.
Ritzow, Gerald R.; and Ritzow, Roger C. Lighting fixture for aquarium or similar article. 3,836,765, Cl. 240-51.11r.
Ritzow, Roger C.: *See—*
Ritzow, Gerald R.; and Ritzow, Roger C., 3,836,765.
Rivola, Luigi; Mormino, Vittorio; and Notari, Bruno, to Snam Progetti S.p.A. Process for the electrochemical manufacture of silver containing catalysts. 3,836,436, Cl. 204-10.000.
RMI Company: *See—*
Bartlo, Louis J.; and Bomberger, Howard B., Jr., 3,835,526.
Roberts, Carl J.: *See—*
Keegan, Patrick J.; and Roberts, Carl J., 3,836,706.
Roberts, Charles B.: *See—*
Schmidt, Donald L.; and Roberts, Charles B., 3,836,385.
Roberts, Robert R.; and Di Gioia, Leo J. Surgical instrument. 3,835,859, Cl. 128-305.000.
Robertshaw Controls Company: *See—*
Cross, Charles, 3,836,904.
Cross, Charles, 3,836,905.
Cross, Charles, 3,836,956.
Robertson, Allen R.: *See—*
Zysk, Edward D.; Robertson, Allen R.; Cisz, Michael; and Sheridan, Robert W., 3,836,402.

Robertson Paper Box Co., Inc.: *See—*
Hackenberg, Robert A., 3,836,065.
Robins, A. H., Company, Incorporated: *See—*
Lerner, Irwin S., 3,835,850.
Robinson, Samuel Harper, to Hide-A-Lite Industries Ltd. Lighting fixture unit. 3,836,760, Cl. 240-10.00r.
Robison, James W.; and Eads, Harold O., to McConough Co. Pole pruner with improved cutting head. 3,835,535, Cl. 30-249.000.
Roblin, John M.; Cole, Frank J.; and Reed, William A., to Republic Steel Corporation. Method of vaporizing metal. 3,836,387, Cl. 117-102.00a.
Roccanova, Frank A., to Phenomenon Productions, Inc. Collapsible cosmetic hair roller. 3,835,871, Cl. 132-39.000.
Rocheleau, Joseph Sarto, Jr.: *See—*
Rogers, Crit H., III; and Rocheleau, Joseph Sarto, Jr., 3,835,857.
Rockwell International Corporation: *See—*
Neisch, James C., 3,836,209.
Zajac, Lawrence J., 3,835,886.
Roderick, William Rodney: *See—*
Schleicher, Joseph Bernard; and Roderick, William Rodney, 3,836,650.
Rodriquez, Edward T. Three-way lamp converter. 3,836,814, Cl. 315-51.000.
Roels, Oswald A. Recovery of protein hydrolysate from fish or fish products. 3,836,686, Cl. 426-376.000.
Rogers, Crit H., III; and Rocheleau, Joseph Sarto, Jr., to Rogers Industries, Inc. Male urinal device. 3,835,857, Cl. 128-295.000.
Rogers, Howard David; Cariddi, John Charles; and Schaeflern, Henry, to Singer Company, The. Needle bed translation control assembly. 3,835,670, Cl. 66-69.000.
Rogers Industries, Inc.: *See—*
Rogers, Crit H., III; and Rocheleau, Joseph Sarto, Jr., 3,835,857.
Rohm Gesellschaft mit beschrankter Haftung: *See—*
Schroeder, Guenter; Gaenzler, Wolfgang; Uddrich, Peter; and Babuliak, Josef, 3,836,551.
Roland, Murray C.: *See—*
Olson, Rich L.; Roland, Murray C.; and Hammond, Clif, 3,836,078.
Roller, Hermann; Stritzinger, Heinz; Hartmann, Job-Werner; Falk, Roland; and Balz, Werner, to Badische Anilin- & Soda-Fabr:k Aktiengesellschaft. Manufacture of magnetic recording media. 3,836,395, Cl. 117-238.000.
Rolls-Royce (1971) Limited: *See—*
Kay, Christopher John; and Horbury, Eric Anthony, 3,836,473.
Roman, Robert J.: *See—*
Bundschuh, John J.; and Roman, Robert J., 3,836,239.
Romes, Roman: *See—*
Leutner, Volkmar; and Romes, Roman, 3,835,888.
Romey, Ingo; and Koelling, Georg, to Bergwerksverband GmbH. Briquette and process for making the same. 3,836,343, Cl. 44-25.000.
Ronway Engineering Company Limited: *See—*
Ham, Rowland Herbert, 3,836,178.
Roos, Ernst; Abele, Manfred; Nast, Roland; Kempermann, Theo; and Schubart, Rudiger, to Bayer Aktiengesellschaft. N-[2-Formylpropylthio-(2)]-sulfonamides. 3,836,562, Cl. 260-453.00r.
Ropiequet, Richard L., to Alta Industries, Incorporated. Nonwoven thermoplastic fabric. 3,836,416, Cl. 161-2.000.
Rosa, Giovanni; and Canepa, Angelo, to SAIPEM, S.p.A. Device for surveying the configuration of an immersed pipe during its laying. 3,835,707, Cl. 73-291.000.
Rosenblatt, Gordon, to Canadian Porcelain Company Limited. Electrical insulator and conducting tar therefor. 3,836,705, Cl. 174-140.00c.
Rosendahl, John R.; Lay, Willard W.; and Harrer, Paul H., to Allis-Chalmers Corporation. Crop conditioners. 3,835,629, Cl. 56-14.400.
Rosenstein, William; and Booth, Thomas Allan, to Addressorgraph-Multigraph Corporation. Optical image rotating device. 3,836,918, Cl. 354-5.000.
Rosenwein, David. Eyeglass display holder. 3,836,007, Cl. 211-13.000.
Ross, Gray Ernest Donald, to Zenith Carburetter Company Limited, The. Automatic cold starting devices for internal combustion engines. 3,835,831, Cl. 123-179.00g.
Ross, Hugh C. Solid-state high input impedance meter system. 3,836,852, Cl. 324-123.00r.
Ross, William A.; Bach, John W.; and Olson, Warren E., to Pitney-Bowes, Inc. Apparatus for automatically cleaning the blanket cylinder of an offset printer. 3,835,779, Cl. 101-425.000.
Rothrock, Richard E.: *See—*
Holler, Robert W.; and Rothrock, Richard E., 3,836,689.
Rotier, Donald J., to Honeywell Inc. Propagation speed determining apparatus. 3,836,953, Cl. 340-16.00r.
Rous, Arthur: *See—*
Del Priore, Vincent; Rous, Arthur; and Holtzman, Richard, 3,836,066.
Roussel-UCLAF: *See—*
Perronnet, Jacques; and Girault, Pierre, 3,836,582.
Routh, Claude C.: *See—*
Geren, Keith E.; Papineau, Milton D.; and Routh, Claude C., 3,836,951.
Roy, Gerald L., to Kerr Glass Manufacturing Corporation. Coating of glassware to improve its abrasion resistance. 3,836,386, Cl. 117-72.000.
Royal Industries, Inc.: *See—*
Rishovd, Sigurd A., 3,835,547.
Rucker Company, The: *See—*
Wahlgren, Wallace W.; and Douglas, Ellwood S., 3,836,821.
Rudel, Harry W.; and Kincl, Fred A., to Biological Concepts, Inc. Novel oral contraceptive combination. 3,836,651, Cl. 424-238.000.
Rudolph, Hans: *See—*
Bockmann, August; Rudolph, Hans; and Nouvertne, Werner, 3,836,490.
Tacke, Peter; Haupt, Heinrich; Blank, Heinz Ulrich; Bockmann, August; and Rudolph, Hans, 3,836,501.
Rudolph, Rome R. Gearless intermittent motion device. 3,835,717, Cl. 74-70.000.
Ruedebusch, Burnell A. Boat conveyance means. 3,836,029, Cl. 214-450.000.
Rup, Max: *See—*
Steinwart, Johannes; and Rup, Max, 3,836,294.
Russell, Carl D., 3% to Studebaker, Robert I. and Studebaker, Martha Jean. Wide rear view day and night outside mirror. 3,836,235, Cl. 350-280.000.
Russell, Robert G., to Owens-Corning Fiberglas Corporation. Yarns including fibrous glass strands and methods of their production. 3,835,637, Cl. 57-140.0by.
Rutkevich, Zinovy Yakovlevich: *See—*
Galperin, Alexandr Lvovich; Serebryannikov, Albert Semenovich; Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; Lukoshkov, Vladimir Iosifovich; Lileev, Valeryan Petrovich; Loschilin, Evgeny Dmitrievich; Rutkevich, Zinovy Yakovlevich; Sakharov, oris Alexandrovich; and German, Zinovy Antolievich, 3,835,893.
S. K. S. Limited: *See—*
Kristensen, Paul A.; and Simon, William F., 3,835,912.
Saab-Scania Aktiebolag: *See—*
Platell, Ove Bertil, 3,835,923.
Sabin, Albert S.: *See—*
Wells, Joel D.; Sabin, Albert S.; Kahn, William J.; and Wigner, William K., 3,836,726.
Sacks, William: *See—*
Bhuta, Mahendra; and Sacks, William, 3,836,620.
Sagi, Zsigmond L.; Comer, Robert C.; Andersen, Norman; Burtha, John R.; and Pertchik, Samuel, to Bio-Medical Sciences, Incorporated. Thermometer packaging. 3,835,990, Cl. 206-306.000.
Sahatjian, Ronald A.: *See—*
Looney, Catharine E.; Michel, Rudolph H.; and Sahatjian, Ronald A., 3,836,369.
SAIPEM, S.p.A.: *See—*
Rosa, Giovanni; and Canepa, Angelo, 3,835,707.
Saito, Akio; Fukazawa, Kiyohiko; and Motoyama, Yukitoshi, to Mitsubishi Pencil Co., Ltd. Mechanical pencil. 3,836,264, Cl. 401-65.000.
Saito, Tsutomu: *See—*
Tsunoda, Norimasa; and Saito, Tsutomu, 3,836,062.
Sakamaki, Hiroshi; and Ozeki, Hiroshi, to Nippon Piston Ring Co., Ltd. Oil seal for use in a rotary piston internal combustion engine. 3,836,296, Cl. 418-142.000.
Sakamoto, Hisashi; Sasaki, Takeshi; Mikami, Satoshi; and Nakashima, Yoichi, to Hitachi, Ltd. Glass mold semiconductor device. 3,837,002, Cl. 357-72.000.
Sakamoto, Teruya; Nishimura, Takemi; and Takarada, Osamu. Extensible boom. 3,836,011, Cl. 212-144.000.
Sakharnov, Vasily Alexeevich; Popov Alfred Nikolaevich; Tishura, Vladimir Ivanovich; Galyan, Boris Afanasievich; and Skulsky, Jury Valentinovich. Equipment for resistance bitt-welding. 3,836,746, Cl. 219-101.000.
Sakharov, Boris Alexandrovich: *See—*
Galperin, Alexandr Lvovich; Serebryannikov, Albert Semenovich; Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; Lukoshkov, Vladimir Iosifovich; Lileev, Valeryan Petrovich; Loschilin, Evgeny Dmitrievich; Rutkevich, Zinovy Yakovlevich; Sakharov, oris Alexandrovich; and German, Zinovy Antolievich, 3,835,893.
Sakurai, Yasunoeu: *See—*
Shimizu, Masao; Sakurai, Yasunoeu; Sato, Hideo; and Inoue, Keiji, 3,836,794.
Salat, Carlos Ferrar: *See—*
Batlles, Jorge Ferrer; Salat, Carlos Ferrar; and Riera, Juan Colome, 3,836,668.
Salaun, Harold L., Jr.: *See—*
Mayer, Mayer, Jr.; Kotter, James I.; Salaun, Harold L., Jr.; and Brown, Roger S., 3,835,638.
Saldick, Jerome, to FMC Corporation. Production of nickel fluoride. 3,836,634, Cl. 423-489.000.
Salem Machine Company: *See—*
Earhart, Jack R.; Crocker, James Dennis; and Johnson, John K., 3,836,130.
Salsbury, Phillip J.: *See—*
Amelio, Gilbert F.; and Salsbury, Phillip J., 3,836,409.
Saltzman, Gilbert A.; Otani, Tony U.; and Lomax, Donald P., to Xaloy Incorporated. Wear resistant composite cylinder linings. 3,836,341, Cl. 29-191.600.
Salza, Silvio. Protein free alimentary pastes and a process for their production. 3,836,680, Cl. 426-158.000.
Sampson, Roy John; and Lake, Ivan James Samuel. Hydrocarbon conversion process and silica and/or alumina-containing catalyst therefor. 3,836,594, Cl. 260-668.00a.
Samsonite Corporation: *See—*

Milette, Kenneth A.; Garavelli, Frank D.; and Tolleson, Thomas H., 3,836,194.
Samuelsson, Bengt. Prostanoic acid derivatives. 3,836,578, Cl. 260-514.00d.
Sander, Bruno: *See—*
Ricker, Ernst; Sander, Bruno; Schmidt, Franz; Schwartz, Erich; Sperber, Heinrich; and Wilhelm, Hans, 3,836,605.
Sandoz Ltd.: *See—*
Frey, Walter; and Toth, Istvan, 3,836,546.
Frey, Walter; and Yarborough, William, 3,836,601.
Toth, Istvan, 3,836,547.
Sandoz-Wander, Inc.: *See—*
Buzzolini, Mario G., 3,836,656.
Galantay, Eugene E., 3,836,538.
Sandvik AB, mesne: *See—*
Lux, Benno; Funk, Roland; Schachner, Herbert; and Triquet, Christian, 3,836,392.
Sanga, Yasuhiro. Exhaust smoke purifying apparatus for incinerators. 3,835,796, Cl. 110-119.000.
Sanitary Controls, Inc.: *See—*
Bausenbach, Arthur E.; Seiple, Richard T.; and Palopoli, Frank D., 3,836,123.
Sano, Tutomu; and Doya, Masaharu, to Mitsubishi Gas Chemical Company, Inc. Process for the halogenation of side chains of aromatic compounds. 3,836,445, Cl. 204-163.00r.
Sansui Electric Co., Ltd.: *See—*
Ito, Ryosuke; and Takahashi, Susumu, 3,836,715.
Santa Fe Drilling Company: *See—*
Lloyd, Samuel Harry, III; and Goren, Yorman, 3,835,800.
Santilli, Arthur A.: *See—*
Kim, Dong H.; and Santilli, Arthur A., 3,836,533.
Santilli, Arthur A.; Kim, Dong H.; and Fieber, Richard A., to American Home Products Corporation. Derivatives of 2-methylthio- and 2-phenyl-4,6-dichloro-5-pyrimidinecarboxaldehyde. 3,836,529, Cl. 260-240.00g.
Santilli, Arthur A.; Scotese, Anthony C.; and Kim, Dong H., to American Home Products Corporation. 3-(Substituted) amino)-5,6-diphenyl-4-pyridazinecarboxylic acids. 3,836,532, Cl. 260-250.00a.
Sanyo Electric Co., Ltd.: *See—*
Miyake, Yuji; Kashiwara, Hideo; and Mizukawa, Jun, 3,835,626.
Sarkes Tarzian, Inc.: *See—*
Shields, Marvin L., 3,836,823.
Sartre, Bernard; Pigeaud, Jean-Marie; and Masure, Daniel, to Rhone-Progil. Apparatus for the recovery of leakages of brine in the metallic bottoms of diaphragm cells. 3,836,438, Cl. 204-279.000.
Sasaki, Takeshi: *See—*
Sakamoto, Hisashi; Sasaki, Takeshi; Mikami, Satoshi; and Nakashima, Yoichi, 3,837,002.
Sasaki, Toshio: *See—*
Yasui, Koichi; Yamamoto, Kazuo; Itami, Kazuo; Fujisawa, Kiyoshi; and Sasaki, Toshio, 3,836,336.
Sastri, Aiyaswami S., to Gillette Company, The. Cutting tool. 3,835,537, Cl. 30-346.530.
Satake, Toshihiko. Device for husking grains. 3,835,766, Cl. 99-618.000.
Sato, Hideo: *See—*
Shimizu, Masao; Sakurai, Yasunoeu; Sato, Hideo; and Inoue, Keiji, 3,836,794.
Sato, Masataro. Wheel lift device in pallet transporting fork-lift cart. 3,836,165, Cl. 280-43.120.
Sato, Naotake: *See—*
Yasuda, Naohiko; Ariyoshi, Yasuo; and Sato, Naotake, 3,836,545.
Saucier, Edwin C., Jr.: *See—*
Saucier, Edwin C., Sr.; and Saucier, Edwin C., Jr., 3,836,119.
Saucier, Edwin C., Sr.; and Saucier, Edwin C., Jr., 1/3 to Saucier, Jeannie A. Roof covering removing tool. 3,836,119, Cl. 254-131.000.
Saucier, Jeannie A.: *See—*
Saucier, Edwin C., Sr.; and Saucier, Edwin C., Jr., 3,836,119.
Sauer, J. P., & Sohn, GmbH: *See—*
Bielfeldt, Heinz, 3,835,566.
Saufhaus, Egon, to Schneck, Carl, Maschinenfabrik GmbH. Apparatus for the transport and intermediate storage of panel supports. 3,836,016, Cl. 214-1.00b.
Saurer, Eric, to Ebauches S.A. Electro-optical display device. 3,836,229, Cl. 350-160.000.
Savage, Sidney Clifford: *See—*
Findlay, Peter Michael; Savage, Sidney Clifford; Klee, John Michael; and Gamble, Joseph Eric, 3,835,669.
Savin Business Machines Corporation: *See—*
Hastwell, Peter J.; Smith, Ian E.; and Scroggs, Dennis I., 3,836,245.
Savory Equipment, Inc.: *See—*
Rekesius, John F., 3,835,760.
Sawyer, Bruce A. Multi axes linear movement positioning system. 3,836,835, Cl. 318-685.000.
Sayigh, Adnan A. R.: *See—*
Reymore, Harold E., Jr.; Sayigh, Adnan A. R.; and Grieve, Robin L., 3,836,424.
Schachner, Herbert: *See—*
Lux, Benno; Funk, Roland; Schachner, Herbert; and Triquet, Christian, 3,836,392.
Schaefer, Hans: *See—*
Eberhardt, Hans; and Schaefer, Hans, 3,836,665.
Heuschen, Alexander; Schaefer, Hans; Budich, Wolfgang; Krah, Robert; and Obermeier, Karl, 3,836,274.
Schaefer, Paul: *See—*
Jaeger, Horst; and Schaefer, Paul, 3,836,577.
Schaeflern, Henry: *See—*
Rogers, Howard David; Cariddi, John Charles; and Schaeflern, Henry, 3,835,670.
Schafer, Kurt: *See—*
Hahnkamm, Volker; Rademachers, Jakob; Henkel, Hanno; Brandle, Karl; and Schafer, Kurt, 3,836,378.
Schafer, Lothar; and Wojtech, Bernhard, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Reprocessing of spent nuclear fuel. 3,836,625, Cl. 423-10.000.
Schara, Robert E.; Shoaf, Myron D.; and Berry, Charles P., to General Foods Corporation. Process for inhibiting fat-caps in meat-in-gravy products. 3,836,685, Cl. 426-371.000.
Schatz, Gerold. Fitting for releasably connecting two parts, especially furniture parts. 3,836,267, Cl. 403-17.000.
Schelkunov, Filipp Savelievich: *See—*
Skornyakov, Jury Pavlovich; Tjutjunnikov, Jury Borisovich; Petrukhno, Anatoly Semenovich; and Schelkunov, Filipp Savelievich, 3,836,435.
Schering AG: *See—*
Brinkmann, Bernd, 3,836,565.
Schiebel, Alfred; Kuhn, Falk; Beuter, Hermann; and Planck, Alfred, Jr., to Fouquet-Werk Frauz & Planck. Combined knitting feed and transfer feed circular knitting machine. 3,835,668, Cl. 66-19.000.
Schiefer, Paul: *See—*
Granitzki, Karl Ernst; Schiefer, Paul; and Hess, Heinrich, 3,836,613.
Schiesterl, Gerhard, to Daimler-Benz Aktiengesellschaft. Protective device, especially for the passengers of motor vehicles. 3,836,169, Cl. 280-150.0ab.
Schillreff, George H., to General Dynamics Corporation. Counter measures system. 3,836,968, Cl. 343-18.00e.
Schilp, William Henry: *See—*
Einthoven, Willem Gerard; Schilp, William Henry; and Todd, Albert Alexander, 3,836,997.
Schilp, William Henry; and Todd, Albert Alexander, to RCA Corporation. Semiconductor darlington circuit. 3,836,996, Cl. 357-46.000.
Schippers, Heinz, to Barmag-Barmer Maschinenfabrik Aktiengesellschaft. Apparatus and method for treating thermoplastic yarns. 3,835,631, Cl. 57-34.0hs.
Schirmar, Hermann; and Peilstocker, Gunter, to Bayer Aktiengesellschaft. Thermoplastic moulding composition and mouldings of polycarbonate, having improved ease of mould release when injection moulding. 3,836,499, Cl. 260-31.20r.
Schleicher, Joseph Bernard; and Roderick, William Rodney, to Abbott Laboratories. Method for combating Marek's disease in poultry. 3,836,650, Cl. 424-212.000.
Schlink, Wilhelm: *See—*
Lorenz, Ewald; Schlink, Wilhelm; Kunzler, Bruno; and Goltermann, Klaus-Dieter, 3,836,266.
Schmechel, Robert W. Outdoor salt dispenser. 3,836,051, Cl. 222-175.000.
Schmid, Hans: *See—*
Frater, Georg; Greuter, Hans; and Schmid, Hans, 3,836,584.
Schmidt, Donald L.; and Roberts, Charles B., to Dow Chemical Company, The. Cyclic sulfonium zwitterion-titanium catalysts for a aluminum plating process. 3,836,385, Cl. 117-47.00r.
Schmidt, Franz: *See—*
Ricker, Ernst; Sander, Bruno; Schmidt, Franz; Schwartz, Erich; Sperber, Heinrich; and Wilhelm, Hans, 3,836,605.
Schmidt, Hans-Joachim: *See—*
Krekeler, Hans; Fernholtz, Hans; Freudenberger, Dieter; Schmidt, Hans-Joachim; and Wunder, Friedrich, 3,836,567.
Schmidt, Roger A.: *See—*
Taft, David D.; and Schmidt, Roger A., 3,836,491.
Schmolka, Irving R., to Basf Wyandotte Corporation. Stable hair lacquer gel compositions. 3,836,637, Cl. 424-70.000.
Schnebel, Fritz. Means for covering the roof-like areas of supporting structures. 3,835,603, Cl. 52-83.000.
Schneck, Carl, Maschinenfabrik GmbH: *See—*
Saufhaus, Egon, 3,836,016.
Schneeberger, W., AG: *See—*
Pfister, Ernst, 3,836,211.
Schneider & Kern: *See—*
Schneider, Wilhelm, 3,835,544.
Schneider, Charles; and Goodman, George A., to Charles Inc. Apparatus for testing fabrics and other sheet materials. 3,835,697, Cl. 73-7.000.
Schneider, David: *See—*
Davis, Paul; Schneider, David; and Hollinger, Paul, 3,835,994.
Schneider, Richard F.; and Bloedorn, Arthur R., to Hewlett-Packard Company. Wide frequency range counter system utilizing automatic range searching and loop compensation. 3,836,758, Cl. 235-151.310.
Schneider, Wilhelm, to Schneider & Kern. Impact-protected gear unit for measuring tools. 3,835,544, Cl. 33-147.00j.
Schneider, Wolfgang: *See—*
Lohl, Gunter; Schneider, Wolfgang; Schroder, Heinz; and Noack, Rudolf, 3,836,932.
Schnurrbusch, Karl: *See—*
de Montigny, Armand; Schnurrbusch, Karl; Seyfried, Klaus; and Noll, Walter, 3,836,558.
Schoene, Gunter: *See—*
Reh, Lothar; Bohm, Eberhard; and Schoene, Gunter, 3,836,635.

Schoeps, Knut Christian; and Gustavsson, Tommy Henning Bruno, to Atlas Copco Aktiebolag. Impact wrench with automatic shut-off. 3,835,934, Cl. 173-12.000.

Schon, Klaus Peter. Toner dispensing apparatus. 3,836,054, Cl. 222-414.000.

Schonfeld, Peter; Borgmann, Heinz; and Plohn, Gerhard, to Kraftwerk Union Aktiengesellschaft. Control apparatus for temporarily reducing turbine torque. 3,836,822, Cl. 317-21.000.

Schoo, Jan Andreas: *See—*
Keimpema, Keimpe Klaas; Van der Veen, Marcus Fokke; Rietveld, Andreas Fredericus; and Schoo, Jan Andreas, 3,835,551.

Schrader, Victor H.; Polney, Richard J.; and Vermilyea, Peter W., to Enterprise Machine and Development Corporation. Programmer for air jet texturing apparatus. 3,835,511, Cl. 28-1.400.

Schreiber, Georg; Schroeder, Heinz; Hoppe, Wolfgang; Hadamovsky, Eugene; Ovenhausen, Hans-Walter; and Piotrowski, Bernhard, to Dynamit Nobel Aktiengesellschaft. Process for the purification of benezenecarboxylic acid esters by crystallization. 3,836,573, C. 260-475.00b.

Schreiner, Horst; Geldner, Ernst; and Dietz, Helmut, to Siemens Aktiengessellschaft. Rotary anode for X-ray tubes. 3,836,807, Cl. 313-330.000.

Schroder, Heinz: *See—*
Lohl, Gunter; Schneider, Wolfgang; Schroder, Heinz; and Noack, Rudolf, 3,836,932.

Schroeder, Guenter; Gaenzler, Wolfgang; Uddrich, Peter; and Babuliak, Josef, to Rohm Gesellschaft mit beschrankter Haftung. Method for making salts of N-acylamino carboxylic acids. 3,836,551, Cl. 260-404.000.

Schroeder, Heinz: *See—*
Schreiber, Georg; Schroeder, Heinz; Hoppe, Wolfgang; Hadamovsky, Eugene; Ovenhausen, Hans-Walter; and Piotrowski, Bernhard, 3,836,573.

Schror, Friedrich: *See—*
Vernede, Louis Antoine; Nitzki, Leopold; Liedke, Heinrich; and Schror, Friedrich, 3,835,802.

Schubart, Rudiger: *See—*
Roos, Ernst; Abele, Manfred; Nast, Roland; Kempermann, Theo; and Schubart, Rudiger, 3,836,562.

Schubert & Salzer Maschinenfabrik Aktiengesellschaft: *See—*
Bystron, Bruno, 3,835,747.

Schubert, Dale W.: *See—*
Lowe, Russell T.; Pepi, Jerome S.; and Schubert, Dale W., 3,836,134.

Schubert, Howard C.: *See—*
Matto, Victor G.; and Schubert, Howard C., 3,836,901.

Schulten, Franz, Weberei-und Bekleidungs-Werke: *See—*
Rietzler, Rudolf, 3,835,877.

Schultz, Robert F.; and Cook, Edward H., Jr., to Hooker Chemical Corporation. Bipolar electrode. 3,836,450, Cl. 204-290.00f.

Schultz, Warren J., to General Electric Company. High current interconnection assembly in a microcircuit package. 3,836,697, Cl. 174-68.500.

Schulz, Gerhard: *See—*
Matthias, Guenther; Schulz, Gerhard; Kasper, Werner; and Feind, Klaus, 3,836,583.

Schulz, Jay R., to Dow Corning Corporation. Paintable silicone elastomer. 3,836,502, Cl. 260-37.0sb.

Schulz, Jay R., to Dow Corning Corporation. Silicone elastomers which are paintable. 3,836,503, Cl. 260-37.0sb.

Schuman, Mark. Spectrometric substance analyzer employing temperature modulation. 3,836,255, Cl. 356-85.000.

Schumann, Robert W., to Nicolet Instrument Corporation. Digital oscilloscope control apparatus. 3,836,851, Cl. 324-112.000.

Schuppler, Emil: *See—*
Horst, Wilfried; Coldewey, Heiko; Ammazzalorso, Mario; and Schuppler, Emil, 3,835,911.

Schwaiger, John E. Anti-theft structure for travel trailers. 3,836,173, Cl. 280-150.500.

Schwartz, Erich: *See—*
Ricker, Ernst; Sander, Bruno; Schmidt, Franz; Schwartz, Erich; Sperber, Heinrich; and Wilhelm, Hans, 3,836,605.

Schwartz, Joseph E., to Opto Dynetics Inc. Low inertia electronic camera shutter. 3,836,982, Cl. 354-234.000.

Schwarz, Ludwig: *See—*
Holzgruber, Wolfgang W.; Machner, Peter J. V.; and Schwarz, Ludwig, 3,835,915.

Schwarz, Walter. Method and an apparatus for making tubes. 3,835,684, Cl. 72-50.000.

Schwarz, Wilhelm; Tromp, Henricus; and Heinz, Winfried, to Fried, Krupp Gesellschaft mit beschrankter Haftung. End abutments for sliding doors. 3,835,790, Cl. 105-285.000.

Schwarzkopf, August, to Windmoller & Holscher. Handle-type carrying bag made of plastics material sheeting. 3,836,068, Cl. 229-54.00r.

Schwerin, Gunther, to Bosch, Robert, GmbH. Braking arrangement. 3,835,966, Cl. 188-106.00f.

Schwerin, Gunther, to Bosch, Robert, GmbH. Hydraulic brake system for trailers connected with mechanically braked towing vehicles. 3,836,205, Cl. 303-7.000.

Scitronix Corporation: *See—*
Gagnon, Richard T., 3,836,717.

Scotese, Anthony C.: *See—*
Santilli, Arthur A.; Scotese, Anthony C.; and Kim, Dong H., 3,836,532.

Scott Paper Company: *See—*
Lewyckyj, Roman, 3,835,754.
Touchette, Albert Francis; and Hakanson, Nils L., 3,836,252.

Scroggs, Dennis I.: *See—*
Hastwell, Peter J.; Smith, Ian E.; and Scroggs, Dennis I., 3,836,245.

Scudder, John A., to Chemetron Corporation. Carbon dioxide extruded pellets. 3,835,657, Cl. 62-35.000.

SDF Industrial Trading and Development Company B.V.: *See—*
Gengard, Sven-Erik Olof; and Johansson, Yngve Lennart, 3,836,214.

Searle, G. D., & Co.: *See—*
Klimstra, Paul D., 3,836,629.

Sears, Roebuck and Co., mesne: *See—*
Brooks, Juanita L., 3,835,866.

Seco Manufacturing, Inc.: *See—*
Thoman, Charles J., 3,835,879.

Sedlewicz, Paul G.: *See—*
Haitz, Roland H.; Sedlewicz, Paul G.; Stirrup, Keith A.; Hilbiber, David F.; and Teichner, Robert W., 3,836,793.

Seelmann-Eggebert, Dietrich: *See—*
Beckmann, Rudolf; and Seelmann-Eggebert, Dietrich, 3,835,826.

Seely, John Leland; and Wanlass, Frank M., to General Instrument Corporation. Field effect transistor linear amplifier with clocked biasing means. 3,836,862, Cl. 330-25.000.

Sehlbach, Herbert, KG: *See—*
Berns, Harald, 3,835,506.

Seidel, Harold, to Bell Telephone Laboratories, Incorporated. Broadband impedance desensitizing network. 3,836,863, Cl. 330-53.000.

Seidel, Joseph: *See—*
Foster, Karl; and Seidel, Joseph, 3,836,389.

Seiferth, Oscar E.; Austin, Glenn M.; and Grace, Daniel C., to Meyer, Oscar, & Co., Inc. Easy-opening means for plastic packages. 3,836,039, Cl. 220-54.000.

Seiferth, Oscar E.; Goller, Robert L.; Grindrod, Paul E.; and Radloff, Harry L., to Meyer, Oscar, & Co., Inc. Package and method of making same. 3,836,679, Cl. 426-126.000.

Seip, Hermann, to ITT Industries, Inc. Adjusting device for drum brakes. 3,835,968, Cl. 188-196.00p.

Seiple, Richard T.: *See—*
Bausenbach, Arthur E.; Seiple, Richard T.; and Palopoli, Frank D., 3,836,123.

Seitz, Paul N.; Cox, Gerald C.; and Kahle, Rolf D., to Zuantor Corporation. Pin cushion distortion correction lens. 3,836,926, Cl. 354-76.000.

Semiconductor Research Foundation: *See—*
Nishizawa, Jun-Ichi, 3,836,999.

Senco Products, Inc.: *See—*
Brecht, Carl T., 3,835,991.

Sentralinstitutt for industriellі forskning: *See—*
Andersen, Gunnar Walter, 3,835,741.

Serebryannikov, Albert Semenovich: *See—*
Galperin, Alexandr Lvovich; Serebryannikov, Albert Semenovich; Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; Lukoshkov, Vladimir Iosifovich; Lileev, Valeryan Petrovich; Loschilin, Evgeny Dmitrievich; Rutkevich, Zinovy Yakovlevich; Sakharov, oris Alexandrovich; and German, Zinovy Antolievich, 3,835,893.

Serniuk, George E.: *See—*
O'Farrell, Charles P.; and Serniuk, George E., 3,836,511.

Severijns, Adrianus Petrus: *See—*
Staas, Frans Adrianus; and Severijns, Adrianus Petrus, 3,835,662.

Seyfried, Klaus: *See—*
de Montigny, Armand; Schnurrbusch, Karl; Seyfried, Klaus; and Noll, Walter, 3,836,558.

Shaefer, Frederick C.; Korzeb, Frank; and Bayly, William I., to American Gas Furnace Company. Continuous rotary heat treating furnace. 3,836,324, Cl. 432-112.000.

Shaffer, Raymond E.: *See—*
Gross, Marvin C.; Stana, Regis R.; Klem, Franklin D.; and Shaffer, Raymond E., 3,836,457.

Shakespear, Horacio; and Steele, James A., to General Motors Corporation. Vehicle body construction. 3,835,757, Cl. 98-2.000.

Shalit, Harold: *See—*
Connor, James E., Jr.; Rieve, Robert W.; and Shalit, Harold, 3,836,603.

Shamban, W. S., & Co.: *See—*
Dryer, Eldon O., 3,836,159.

Shang, Jer-Yu; Bisson, Barry A.; and Wynkoop, Raymond, to Sun Research and Development Co. Gasoline containing a methyl phenol and an ether. 3,836,342, Cl. 44-56.000.

Shapiro, Leonard U.: *See—*
Sumida, Kunio A., 3,835,592.

Shapiro, Stan Lee. Auto place kicker. 3,836,147, Cl. 273-55.00b.

Sharp, John C., to Upjohn Company, The. Antifungal methods employing certain carbostyrils. 3,836,657, Cl. 424-258.000.

Shell Oil Company: *See—*
Albers, James C.; Pfenning, Gerald E.; and Anderson, Adrain P., 3,835,924.
Blytas, George C., 3,836,455.
McDermott, David C., 3,835,656.
Sie, Swan T., 3,836,597.
Smith, Ronald S.; Kuderna, Jerome G., Jr.; and Potter, Richard C., 3,836,638.
Suman, George O., Jr., 3,835,929.

Shepherd, Robert, to Plessey Handel und Investments A.G. Spark ignition system. 3,835,830, Cl. 123-148.00e.

Sheridan, Robert W.: *See—*
Zysk, Edward D.; Robertson, Allen R.; Cisz, Michael; and Sheridan, Robert W., 3,836,402.

Sherman, Nelson D.: *See—*
Lagace, James R.; and Sherman, Nelson D., 3,835,489.

Shewbridge, George. Binding strap for coiled articles and the like. 3,835,505, Cl. 24-16.00r.

Shiba Electric Co., Ltd., and Nippon Hoso Kyokai: *See—*
Yamamoto, Makoto; Fukuda, Tomio; and Nakatake, Masamichi, 3,836,756.

Shibata, Akira: *See—*
Murakami, Toshio; and Shibata, Akira, 3,836,707.

Shibata, Teijiro: *See—*
Hokao, Zenjiro; Shibata, Teijiro; and Yasukabe, Siro, 3,835,937.

Shields, Marvin L., to Sarkes Tarzian, Inc. Electrical assembly. 3,836,823, Cl. 317-100.000.

Shigeta, Fumio: *See—*
Ikegaya, Masashi; and Shigeta, Fumio, 3,836,439.

Shih, Pong Su., to Dow Chemical Company, The. Solid epoxy resins from glycidyl ethers of hydrogenated bisphenols or hydrogenated novolacs and aromatic or cycloaliphatic dicarboxylic acids. 3,836,485, Cl. 260-2.0ep.

Shiina, Seiichi. Box shaped furniture unit. 3,836,217, Cl. 312-107.000.

Shimazu, Munenari. Synthetic form resin propagation bed for plants cutting. 3,835,584, Cl. 47-37.000.

Shimizu, Junichi; and Kaga, Toshio, to Hokkaido Sugar Company, Ltd. Continuous process for the hydrolysis of raffinose. 3,836,432, Cl. 195-11.000.

Shimizu, Masanao: *See—*
Minami, Shinsaku; Matsumoto, Jun-Ichi; Shimizu, Masanao; and Takase, Yoshiyuki, 3,836,528.

Shimizu, Masao; Sakurai, Yasunoeu; Sato, Hideo; and Inoue, Keiji, to Denki Onkyo Company Limited. Piezoelectric transformers. 3,836,794, Cl. 310-9.700.

Shimizu, Shigeru, to Hamada Printing Press Mfg. Co., Ltd. Paper feeding apparatus for use in printing machine. 3,836,139, Cl. 271-95.000.

Shimodaira, Tadayoshi; and Gomi, Yoshifumi, to Kabushiki Kaisha Suwa Seikosha and Shinshu Seiki Kabushiki Kaisha. Compact flying printer. 3,835,770, Cl. 101-93.00c.

Shinshu Seiki Kabushiki Kaisha: *See—*
Shimodaira, Tadayoshi; and Gomi, Yoshifumi, 3,835,770.

Shirer, Pauline H.: *See—*
Terry, Roy P., Jr.; Teed, Richard K.; and Shirer, S. Ross, 3,836,421.

Shirer, S. Ross: *See—*
Terry, Roy P., Jr.; Teed, Richard K.; and Shirer, S. Ross, 3,836,421.

Shitsman, Mikhail Borisovich: *See—*
Antonenko, Grigory Semenovich; Badamian, Avetik Artashesovich; Margulis, Grigory Borisovich; Moroz, Ilya Alexandrovich; and Shitsman, Mikhail Borisovich, 3,835,689.

Shnitkin, Harold; Tashjian, Albert; and Shubel, Edward J., to Maxson Electronics Corporation. Polarimeter apparatus. 3,836,973, Cl. 343-113.00r.

Shoaf, Myron D.: *See—*
Schara, Robert E.; Shoaf, Myron D.; and Berry, Charles P., 3,836,685.

Shoberg, Ralph A.; and Cravens, Paul E., to Petrolite Corporation. Mercury removal from latex paint waste water. 3,836,459, Cl. 210-28.000.

Shogo, Suzuki; and Maki, Yamashita, to Minolta Camera Kabushiki Kaisha. Lens assembly for photographing at near or close distance. 3,836,934, Cl. 354-197.000.

Shokurov, Jury Stepanovich: *See—*
Gutman, Anatoly Lvovich; Prefsman, Vladimir Alexandrovich; Abramov, Leonid Mikhailovich; and Shokurov, Jury Stepanovich, 3,836,273.

Shore Plastics, Inc.: *See—*
Sussman, Morris, 3,835,557.

Shubel, Edward J.: *See—*
Shnitkin, Harold; Tashjian, Albert; and Shubel, Edward J., 3,836,973.

Shular, Howard Edward, to Pyronics, Inc. Burner apparatus for flame propagation control. 3,836,315, Cl. 431-9.000.

Shumaker, Charles Storer, to Wean United, Inc. Continuous rolling mill. 3,835,681, Cl. 72-10.000.

Sick, Willmar K. Hair treating instrument and method. 3,835,870, Cl. 132-160.000.

Sides, Daniel Harrison; and Moores, Robert Gordon, Jr., to Black and Decker Manufacturing Company, The. Idling system for power hammer. 3,835,935, Cl. 173-14.000.

Sidwell, Robert W.: *See—*
Tolman, Richard L.; and Sidwell, Robert W., 3,836,645.

Sie, Swan T., to Shell Oil Company. Hydrocarbon isomerization process. 3,836,597, Cl. 260-683.650.

Siegel, Leon J., to Weldotron Corporation. Electronic protection and sensing apparatus. 3,836,828, Cl. 317-146.000.

Siemens Aktiengesellschaft: *See—*
Behrens, Dieter; and Wache, Lothar, 3,836,859.
Dietz, Kurt; Lenert, August; Silbermann, Karl; Appelt, Gunther; and Elsas, Adolf, 3,836,803.
Friedel, Rudolf; and Natter, Bernd, 3,836,808.
Griger, Alfons, 3,836,946.
Guntersdorfer, Max; and Thomann, Helmut, 3,836,877.
Muller, Henrik; and Weidner, Peter, 3,836,722.
Platzoeder, Karl; Martin, Heinz; and Emeis, Reimer, 3,837,000.
Platzoeder, Karl; Martin, Heinz; and Emeis, Reimer, 38,367,000.
Reitzig, Rafeal, 3,836,970.

Siemens Aktiengesellschaft: *See—*
Schreiner, Horst; Geldner, Ernst; and Dietz, Helmut, 3,836,807.

Signetics Corporation: *See—*
Kocsis, Joseph; and Polata, Bohumil, 3,836,998.

Signore, James C., to AVM Corporation. Cabinet drawer suspension system. 3,836,223, Cl. 312-350.000.

Silbermann, Karl: *See—*
Dietz, Kurt; Lenert, August; Silbermann, Karl; Appelt, Gunther; and Elsas, Adolf, 3,836,803.

Silver, Julius L., to Lith-Kem Corporation. Planographic printing plates and method for their preparation. 3,836,366, Cl. 96-33.000.

Silverbow Industries, Inc.: *See—*
Grigg, Donald A., 3,835,487.

Silverman, Emanuel. Centerless grinding fixture for synthetic crystal rods and the like. 3,835,589, Cl. 51-103.0wh.

Silverman, Stephen E. Safety light circuit. 3,836,759, Cl. 240-6.40w.

Simane, Zdenek: *See—*
Irmscher, Klaus; Freisberg, Karl-Otto; Orth, Dieter; Nowak, Herbert; and Simane, Zdenek, 3,836,527.

Simbirdt, Rashid I. Plug device. 3,836,035, Cl. 220-24.500.

Simon, William F.: *See—*
Kristensen, Paul A.; and Simon, William F., 3,835,912.

Simplec Mfg. Co., Inc.: *See—*
Summers, Gerald C., 3,835,953.

Sinclair, Frederick William, to Gloucester Railway Carriage Wagon Company Limited. Snubbed railway bogies. 3,835,789, Cl. 105-224.00r.

Singer Company, The: *See—*
Bennett, William S., 3,836,812.
Johnson, Dwight N., 3,836,113.
Rogers, Howard David; Cariddi, John Charles; and Schaeflern, Henry, 3,835,670.
Zaleski, John F., 3,836,962.

Singer Company, The, mesne: *See—*
Zaleski, John F., 3,836,855.

Singewald, Arno; Fricke, Gunter; and Juno, Detlef, to Kali and Salz AG. Process for the electrostatic separation of clay containing crude potassium salts. 3,835,996, Cl. 209-9.000.

Sinn, Harry, Jr. Damage indicator. 3,835,809, Cl. 116-114.0ah.

Sismore, William W., 1/2 to Harris, Richard T. Tube pulling apparatus. 3,835,520, Cl. 29-202.00d.

Sitgreaves, Norman E.: *See—*
Wagner, George M.; and Sitgreaves, Norman E., 3,836,423.

Skierski, Edwin J. Dies for making a self tapping fastener. 3,835,694, Cl. 72-469.000.

Skildum, John D. Apparatus protector. 3,836,077, Cl. 239-60.000.

Skornyakov, Jury Pavlovich; Tjutjunnikov, Jury Borisovich; Petrukhno, Anatoly Semenovich; and Schelkunov, Filipp Savelievich. Method of heat treatment of coal. 3,836,435, Cl. 201-27.000.

Skoultchi, Martin; and Meier, Eric A., to National Starch and Chemical Corporation. Ethylenically unsaturated derivatives of 4-aminobenzoic acid. 3,836,571, Cl. 260-471.00r.

Skulsky, Jury Valentinovich: *See—*
Sakharnov, Vasily Alexeevich; Popov Alfred Nikolaevich; Tishura, Vladimir Ivanovich; Galyan, Boris Afanasievich; and Skulsky, Jury Valentinovich, 3,836,746.

Slade, Owen George, to White, J. Sameul, & Company Limited. Thruster unit. 3,835,805, Cl. 114-151.000.

Smidth, F. L., & Co.: *See—*
Engel, Erland Christoffer, 3,836,323.

Smith, A. O., Corporation: *See—*
Kramer, David W., 3,836,380.
Le Beau, Donald J., 3,835,986.

Smith, Bill: *See—*
Kellum, Jerome B.; and Smith, Bill, 3,835,738.

Smith, David C.; and Solomon, Peter R., to United Aircraft Corporation. Gas breakdown laser pulse selector. 3,836,867, Cl. 331-94.50r.

Smith, Fenter Willie. Portable intermittent orthopedic traction device. 3,835,847, Cl. 128-75.000.

Smith, Ian E.: *See—*
Hastwell, Peter J.; Smith, Ian E.; and Scroggs, Dennis I., 3,836,245.

Smith International, Inc.: *See—*
Winter, Henry A., Jr., 3,835,940.

Smith, Lynwood Vincent, to Gulf & Western Manufacturing Company. Clasp. 3,836,049, Cl. 24-201.00r.

Smith, Raymond L., Jr.: *See—*
Weisker, Alexander; and Smith, Raymond L., Jr., 3,836,031.

Smith, Ronald S.; Kuderna, Jerome G., Jr.; and Potter, Richard C., to Shell Oil Company. Hydroxylated polymers useful in forming pecticidal phosphate gels. 3,836,638, Cl. 424-78.000.

Smith, Terry M.: *See—*
Monser, George J.; Hardie, George S.; Ehrhardt, John R.; and Smith, Terry M., 3,836,976.

Smith, Vernon O., to Overhead Door Corporation. Dockboard safety stop. 3,835,497, Cl. 14-71.000.

Smrt, Thomas J. Method of filling aerosol spray cans. 3,835,896, Cl. 141-3.000.

Snam Progetti S.p.A.: *See—*

Rivola, Luigi; Mormino, Vittorio; and Notari, Bruno, 3,836,436.
Snaper, Alvin A. Arc deposition apparatus. 3,836,451, Cl. 204-298.000.
Snelling, Richard A.: *See*—
Penniman, Robert; and Snelling, Richard A., 3,836,058.
Snyder, Richard Paul Largo: *See*—
Teague, Roger W.; and Snyder, Richard Paul Largo, 3,836,463.
Societa Italiana Resine S.p.A.: *See*—
Reni, Cesare; Lugo, Luigi; and Gualdi, Giorgio, 3,836,588.
Societa Italiana Telecomunicazioni Siemens S.p.A.: *See*—
Lovadina, Armando; and Morelli, Franco, 3,836,856.
Societe Anonyme l'Eclairage Technique: *See*—
Adam, Marie Henri Hubert, 3,836,954.
Societe Civile d'Etudes de Centrifugation: *See*—
Peytavin, Pierre; and Babel, Louis, 3,835,740.
Societe Civile Le Brin: *See*—
Hadjidjanian, Huguette Micheline Mary Nadot, 3,835,705.
Societe De Fabrication D'Instruments De Mesure (S.F.I.M.): *See*—
Preti, Jean-Claude, 3,836,965.
Societe Generale de Recherches et d'Applications Scientifiques-Sogeras: *See*—
Wirth, Pierre-Charles; and Tixier, Rene, 3,836,433.
Societe les Piler Wonder: *See*—
Garcin, Maurice; and Gauthier, Adrien, 3,836,398.
Societe Miniere et Metallurgique de Penarroya: *See*—
Lesbros, Andre Jose; and Brachet, Max Jacques Roul, 3,836,339.
Societe Nouvelle des Echafaudages Tubulaires Mills: *See*—
Beziat, Bernard, 3,835,612.
Societe Suisse pour l'Industrie Horlogere Managemant Services SA: *See*—
Hetzel, Max, 3,835,519.
Soco-Lowell Corporation: *See*—
Anderson, Gordon C.; and Brooks, Frank E., 3,835,634.
Soejima, Shigeo; and Irokawa, Hideo, to NGK Insulators, Ltd. Method for producing manganese-zinc ferrite. 3,836,472, Cl. 252-62.570.
Sokol, Phillip Edward; and Tsai, Hu-Chu, to Gillette Company, The. Dyeing hair with nitro-substituted phenylene compounds. 3,836,326, Cl. 8-10.100.
Solomon, James E.; and Zias, Arthur R., to National Semiconductor Corporation. Semiconductor pressure transducer employing novel temperature compensation means. 3,836,796, Cl. 307-310.000.
Solomon, Marwich, H.: *See*—
Ling, Ting H.; Wade, Robert M.; and Solomon, Marwich, H., 3,836,482.
Solomon, Peter R.: *See*—
Smith, David C.; and Solomon, Peter R., 3,836,867.
Solymos, Frederick, to Westinghouse Electric Corporation. Elevator system. 3,835,959, Cl. 187-22.000.
Somlo, Tibor; and Stagi, Mauro, to Ciba-Geigy AG. Process for the manufacture of 1,3-diphenyl-4-methyl-5-alkyl-pyrazolines. 3,836,522, Cl. 260-239.900.
Sommer, Siegfried: *See*—
Achsel, Eberhard; and Sommer, Siegfried, 3,836,574.
Somos, Istvan: *See*—
Piccone, Dante E.; Somos, Istvan; and McIntyre, James E., 3,836,994.
Sonnenmoser, Hubert: *See*—
Fischer, Wilhelm; Krause, Friedrich; Biesner, Walter; and Sonnenmoser, Hubert, 3,836,688.
Sonoda, George: *See*—
De Simone, Roy R.; Donofrio, Nicholas M.; Linton, Richard H.; Sonoda, George; and Wade, William T., 3,836,892.
Sony Corporation: *See*—
Ando, Tetsuo; and Matsumoto, Hiroyuki, 3,836,906.
Soos, Steven W., to Lake Shore Electric Corporation. Switch with peripheral cam actuator. 3,836,742, Cl. 200-153.01b.
Soulos, George D., to Gem Insect Control, Inc. Electrical discharge insect control system. 3,835,577, Cl. 43-112.000.
Southwick, J. Wanless: *See*—
Kirton, Joseph Mason; and Southwick, J. Wanless, 3,835,553.
Spanke, Edwin A.; Carrieri, Louis F.; and Francey, Melvin H., to Gulf & Western Manufacturing Company. Fluid operated clutch and brake. 3,835,971, Cl. 192-18.00a.
Specht, Thomas F.; and Babecki, Robert J., to Union Special Corporation. Sliding ejector pad attachment for use with sliding bolster plate for presses. 3,835,691, Cl. 72-427.000.
Speck, Hans-Reimer: *See*—
Bottcher, Siegfried; and Speck, Hans-Reimer, 3,836,291.
Speich, Francisco, to Muller, Jakob. Apparatus for moving thread guide devices of textile machines. 3,835,894, Cl. 139-55.000.
Sperber, Heinrich: *See*—
Ricker, Ernst; Sander, Bruno; Schmidt, Franz; Schwartz, Erich; Sperber, Heinrich; and Wilhelm, Hans, 3,836,605.
Sperry Rand Corporation: *See*—
Eckert, John P., Jr.; and Bucks, Robert M., 3,836,792.
Spickler, Joseph William: *See*—
Rasor, Ned S.; and Spickler, Joseph William, 3,835,864.
Spietschka, Ernst: *See*—
Kirsch, Aloys; Fuchs, Otto; and Spietschka, Ernst, 3,836,379.
Spincic, Johann: *See*—
Broemer, Heinz; Huber, Werner; Meinert, Norbert; and Spincic, Johann, 3,836,375.
Spitzl, Walter: *See*—
Meisner, Alfred; and Spitzl, Walter, 3,836,213.
Spooner, Robert J., to Cashin Systems Corporation. Apparatus for stacking and weighing sliced food products. 3,835,742, Cl. 83-77.000.
Sporre, Sten Ragnar, to Forsheda Ideutveckling AB. Method of forming pipes. 3,836,622, Cl. 264-249.000.
Springer, Edward M., to Heyer Inc. Compensating impression roller mount for stencil duplicator. 3,835,772, Cl. 101-116.000.
Spruyt, Harry; and Hoffman, Louis S., to Colorcraft Corporation. Camera case for a pocket camera. 3,835,905, Cl. 150-52.00j.
Squire, Christopher John: *See*—
Barrett, Arthur Michael; Carter, John; Hull, Roy; Le Count, David James; and Squire, Christopher John, 3,836,671.
Staar Development Company: *See*—
Staar, Marcel Jules Helene, 3,836,241.
Staar, Marcel Jules Helene, to Staar Development Company. Audio-visual device. 3,836,241, Cl. 353-19.000.
Staas, Frans Adrianus; and Severijns, Adrianus Petrus, to U.S. Philips Corporation. Device for transporting heat from a lower to a higher temperature level. 3,835,662, Cl. 62-467.000.
Staats, Henry N., to General Binding Corporation. Method for eliminating bubbles in laminates. 3,836,414, Cl. 156-87.000.
Stach, Hans; Hoffmann, Dieter; and Brecht, Heinz, to Farbwerke Hoechst Aktiengesellschaft. Derivatives of perfluorated carboxylic acids. 3,836,552, Cl. 260-404.500.
Stache, Ulrich; Haede, Werner; Fritsch, Werner; Radscheit, Kurt; and Lindner, Ernst, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Digitoxigenin-3-α,L-rhamnosido-4'-acylates. 3,836,520, Cl. 260-210.500.
Stafford, Larry O., to Beloit Corporation. Flat film extrusion die. 3,836,313, Cl. 425-463.000.
Stagi, Mauro: *See*—
Somlo, Tibor; and Stagi, Mauro, 3,836,522.
Stahl, Robert R.: *See*—
Laakaniemi, Richard N.; and Stahl, Robert R., 3,835,876.
Stahle, Helmut: *See*—
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Zeile, Karl; Engelhardt, Albrecht; and Traunecker, Werner, 3,836,666.
Stalego, Charles J., to Owens-Corning Fiberglas Corporation. Apparatus for producing fibrous material. 3,836,346, Cl. 65-1.000.
Staley, James T.; Hunsicker, Harold Y.; and Brown, Robert H., to Aluminum Company of America. Aluminum alloy product and method of making. 3,836,405, Cl. 148-12.700.
Stana, Regis R.: *See*—
Gross, Marvin C.; Stana, Regis R.; Klem, Franklin D.; and Shaffer, Raymond E., 3,836,457.
Stanadyne, Inc.: *See*—
Bell, Frank W., 3,836,083.
Mongerson, Paul A.; and Moen, Alfred M. (said Mongerson assor. to), 3,835,887.
Stanley, Robert K. Draw crimping textile film strands. 3,835,513, Cl. 28-72.140.
Stanley Works, The: *See*—
De Jong, Maarten C.; and Gutowski, Antoni P., 3,835,549.
Stansfield, Fred, to P & O Research & Development Company. Self-straining bolts. 3,835,523, Cl. 29-252.000.
Start, John Francis: *See*—
Franko-Filipasic, Borivoj Richard; and Start, John Francis, 3,836,599.
Franko-Filipasic, Borivoj Richard; Orwoll, Edward Francis; and Start, John Francis, 3,836,608.
Statham Instruments, Inc.: *See*—
Elazar, Shmuel; and Neville, Dee J., 3,835,704.
Stauffer Chemical Company: *See*—
Pitt, Harold M., 3,836,524.
Szabo, Karoly, 3,836,570.
Stauffer, Norman L., to Honeywell Inc. Detecting apparatus for determining when image is in focus. 3,836,772, Cl. 250-204.000.
Steele, James A.: *See*—
Shakespear, Horacio; and Steele, James A., 3,835,757.
Steen, Carl E., to Collins Radio Company. Automatic intensity control for electronic displays. 3,836,797, Cl. 307-311.000.
Steinberger, Siegfried; Pflugbell, Mathias; Nagel, Erich; Baasner, Wilhelm; Dreher, Karl; Englert, Werner; Ehrengruber, Paul; and Fleck, Adolf, to AGFA-Gevaert Aktiengesellschaft. Apparatus for transporting webs in photographic copying machines or the like 3,836,060, Cl. 226-115.000.
Steiner, Henry William, to Colonial Mirror and Glass Corporation. Humane trap. 3,835,576, Cl. 43-86.000.
Steinetz, Bernard George, Jr., to Ciba-Geigy Corporation. Glutarimides for reducing the number of fetuses in mated or impregnated female mammals. 3,836,659, Cl. 424-268.000.
Steinwart, Johannes; and Rup, Max, to Audi NSU Auto Union Aktiengesellschaft and Wankel GmbH. Piston for rotary piston machines and means for its manufacture. 3,836,294, Cl. 418-91.000.
Stelter, Siegfried: *See*—
Hartmann, Heinrich; Stelter, Siegfried; and Trelewsky, Heinz-Guenter, 3,835,997.
Stempel, Arthur; and Westley, John, to Hoffmann-La Roche Inc. Diazo derivatives of antibiotic X-537A. 3,836,516, Cl. 260-141.000.
Stendenbach, Karl-Heinz: *See*—
Hartlapp, Gerhard; Haas, Hans; and Stendenbach, Karl-Heinz, 3,836,675.
Steponaitis, Vincas P. Holder for processed photographs. 3,836,925, Cl. 354-75.000.

Stevens, Peter, 20% to Lee, Raymond, Organization, Inc., The. Low pressure warning system for a tire. 3,835,808, Cl. 116-34.00r.

Stevens, Robert T., to American Home Products Corporation. Process for the uniform distribution of a drug on a granulated base. 3,836,618, Cl. 264-101.000.

Stevens, Robert W.: *See—*
Egan, Dale W.; Holstrom, Geoffrey B.; Lord, Harry C.; Stevens, Robert W.; Port, Darrell P.; and Howard, Rollen D., 3,836,237.

Stievenart, Emile Frans; Van Bouwel, Leo Paul; and Plessers, Hendrik Sylvester, to Agfa-Gevaert N.V. Radiographic film cassette. 3,836,783, Cl. 250-481.000.

Stillwagon, James E., to Aluminum Company of America. Metal foil for heating and cooling foods. 3,836,064, Cl. 229-3.5mf.

Stimson, Ian Leonard; Dowell, Frederick Sidney; and Healy, Benedict Pascal, to Dunlop Limited. Wheel assemblies. 3,836,201, Cl. 301-6.00a.

Stirrup, Keith A.: *See—*
Haitz, Roland H.; Sedlewicz, Paul G.; Stirrup, Keith A.; Hilbiber, David F.; and Teichner, Robert W., 3,836,793.

Stock, Arthur J.; Christofer, Donald E.; and Brinza, Joseph E., to Stock Equipment Company. Method and apparatus for filling and closing containers. 3,835,617, Cl. 53-21.000.

Stock Equipment Company: *See—*
Homer, John C., III; and Stock, John R., 3,836,838.
Stock, Arthur J.; Christofer, Donald E.; and Brinza, Joseph E., 3,835,617.

Stock, John R.: *See—*
Homer, John C., III; and Stock, John R., 3,836,838.

Stookey, Lawrence L., to Hach Chemical Company. Colorimetric determination of iron. 3,836,331, Cl. 23-230.00r.

Strauss, Bruce P., to United States of America, Atomic Energy Commission. Method of fabricating composite superconductive electrical conductors. 3,836,404, Cl. 148-11.50r.

Strauss, Howard J.; and Hill, Edward S., to Gould Inc. Dry battery seal and terminal connection. 3,836,400, Cl. 136-133.000.

Streck, Roland; and Weber, Heinrich, to Chemische Werke Huls Aktiengesellschaft. Polyalkenamers and process for the preparation thereof. 3,836,593, Cl. 260-677.00r.

Strecker, Larry A.; and Wood, James E., to Inmont Corporation. Cable sealant composition and method of sealing cable. 3,836,695, Cl. 174-23.00c.

Strehlow, Wolfgang H.; Lee, Pui Kum; and Packard, James R., to Minnesota Mining & Manufacturing Company. Hologram memory readout system. 3,836,224, Cl. 350-3.500.

Strimel, Robert S., to Olsen, Tinius, Testing Machine Co., Inc. Long stroke testing machine. 3,835,699, Cl. 73-95.000.

Stritzinger, Heinz: *See—*
Roller, Hermann; Stritzinger, Heinz; Hartmann, Job-Werner; Falk, Roland; and Balz, Werner, 3,836,395.

Strong-Scott Mfg. Co., The: *See—*
Thoreson, Gene A.; Ley, Richard A,; Miller, Cardell E.; and Emery, Lewis A., 3,836,125.

Strubhar, Malcolm K.; and Glenn, Edwin E., Jr., to Mobil Oil Corporation. Method of creating a plurality of fractures from a deviated well. 3,835,928, Cl. 166-308.000.

Struk, James R.; and Werner, Robert G., to International Business Machines Corporation. Transistor-transistor logic circuitry and bias circuit. 3,836,789, Cl. 307-203.000.

Stubbmann, Albert, to Kohner Bros., Inc. Marionette assembly with manipulating glove. 3,835,582, Cl. 46-126.000.

Studebaker, Martha Jean: *See—*
Russell, Carl D., 3,836,235.

Studebaker, Robert I.: *See—*
Russell, Carl D., 3,836,235.

Stutz, Rolf: *See—*
Johanson, Donald L.; and Stutz, Rolf, 3,836,732.

Sugai, Kazuhiko: *See—*
Ohara, Sigeo; Toshimura, Fumio; and Sugai, Kazuhiko, 3,836,723.

Sugino, Akira; and Ota, Takao, to Nintendo Co., Ltd. Collapsible carrier. 3,836,164, Cl. 280-41.00a.

Sugioka, Ryoichi, to Fujitou Limited. Time multiplex communication system for use with a space satellite. 3,836,721, Cl. 179-15.0bs.

Suman, George O., Jr., to Shell Oil Company. Method and apparatus for protecting electrical cable for downhole electrical pump service. 3,835,929, Cl. 166-315.000.

Sumida, Kunio A., to Shapiro, Leonard U. Mechanism for driving reciprocating tool. 3,835,592, Cl. 51-170.0tl.

Sumimoto, Toru; Matsushita, Shigeo; Fujiware, Tadafumi; Koizumi, Ken; and Yamazaki, Tetsuya, to Nippon Selfoc Company, Limited. Method for manufacturing optical integrated circuits utilizing an external electric field. 3,836,348, Cl. 65-30.000.

Sumitomo Chemical Company, Ltd.: *See—*
Higo, Akio; Itaya, Nobushige; Hirai, Hajime; and Yoshioka, Hirosuke, 3,836,568.
Yamada, Eiji, 3,836,549.

Summers, Gerald C., to Simplec Mfg. Co., Inc. Acoustic caliper logging. 3,835,953, Cl. 340-15.5bh.

Sumner, John S. Apparatus for laminating wooden strips. 3,835,904, Cl. 144-313.000.

Sun Oil Company: *See—*
Angstadt, Howard P., 3,836,589.

Sun Oil Company of Pennsylvania: *See—*
Campbell, George E., Jr.; and Lerner, Julius, 3,835,736.

Sun Research and Development Co.: *See—*
Shang, Jer-Yu; Bisson, Barry A.; and Wynkoop, Raymond, 3,836,342.

Sun Research and Development Company: *See—*
Driscoll, Gary L., 3,836,596.
Turner, John O., 3,836,523.

Sundermann, Henry L. Stepped toggle mechanism. 3,835,727, Cl. 74-520.000.

Surette, Sylvain A. Book holder and book stand. 3,836,108, Cl. 248-452.000.

Surka, Ebun A.: *See—*
Young, William O., Jr.; Surka, Ebun A.; and Quattlebaum, Walter J., 3,835,746.

Sussman, Morris, to Shore Plastics, Inc. Heel insert for high-heel shoe. 3,835,557, Cl. 36-34.00a.

Sutch, Brian Leo Chudleigh, to Airfix Industries Limited. Production of containers. 3,836,063, Cl. 229-1.50b.

Suyderhoud, Henri G.: *See—*
Campanella, Samuel J.; and Suyderhoud, Henri G., 3,836,734.

Svenska Agghandelsforbundet Foren U.P.A.: *See—*
Andersson, Sven Ingemar, 3,836,067.

Svensson, Lars-Erik: *See—*
Lindskog, Per Folke; and Svensson, Lars-Erik, 3,836,355.

Swanson, Robert G.: *See—*
Meyer, Robert W.; and Swanson, Robert G., 3,836,314.

Sweetheart Plastics, Inc.: *See—*
Davis, Paul; Schneider, David; and Hollinger, Paul, 3,835,994.

Swenson, Curtis A.: *See—*
Marta, Henry A.; and Swenson, Curtis A., 3,835,787.

Swiss Aluminium Ltd.: *See—*
Kugler, Tibor; and Rieger, Hans Wolfhart, 3,836,394.

Sybron Corporation: *See—*
Bartsch, Friedrich F., 3,836,327.

Sygnator, Henry Anton, to Illinois Tool Works Inc. Method and apparatus for swaging screw blank extremities. 3,835,495, Cl. 10-10.00r.

Systron Donna Corporation: *See—*
Brown, Larry E., 3,835,839.

Szabo, Karoly, to Stauffer Chemical Company. m-Amidophenylcarbamates. 3,836,570, Cl. 260-471.00c.

Sze, Morgan Chuan-Yuan: *See—*
Whitehead, Richard T.; Luberoff, Benjamin J.; and Sze, Morgan Chuan-Yuan, 3,836,461.

Szer, Leon. Fluorescent lamp casings. 3,836,764, Cl. 240-51.11r.

Szeverenyi, Nikolaus A.; and Thompson, David F., to GTE Sylvania Incorporated. . 3,836,882, Cl. 337-102.000.

Szulman, Eigard. Toolmaker's vise. 3,835,594, Cl. 51-220.000.

TAB Engineers, Inc.: *See—*
Bonebrake, Gay M., 3,836,687.

Tacke, Peter; Haupt, Heinrich; Blank, Heinz Ulrich; Bockmann, August; and Rudolph, Hans, to Bayer Aktiengesellschaft. Self extinguishing polyamide moulding compositions. 3,836,501, Cl. 260-37.00n.

Tadanier, John Soloman: *See—*
Hallas, Robert; Martin, Jerry Roy; and Tadanier, John Soloman, 3,836,519.

Taft, David D.; and Schmidt, Roger A., to Ashland Oil Inc. Novel compositions comprising polyisocyanates and hydroxybenzoic acid capped polymers curable with tertiary amines and process of curing same. 3,836,491, Cl. 260-22.0tn.

Tagawa, Hiroaki; and Fujii, Kimio, to Eiji Munekata. Method of making uranium sesquicarbide. 3,836,631, Cl. 423-256.000.

Taguchi, Naoyoshi. Gas detecting device and method of making same. 3,835,529, Cl. 29-570.000.

Taguchi, Tatsuya: *See—*
Hasegawa, Goro; Nakamoto, Soichi; Takishima, Yoshiyuki; Mashimo, Yukio; Taguchi, Tatsuya; Nakamura, Zenzo; and Taguchi, Tetsuya, 3,836,922.

Taguchi, Tetsuya: *See—*
Hasegawa, Goro; Nakamoto, Soichi; Takishima, Yoshiyuki; Mashimo, Yukio; Taguchi, Tatsuya; Nakamura, Zenzo; and Taguchi, Tetsuya, 3,836,922.
Uchiyama, Takashi; Taguchi, Tetsuya; and Mashimo, Yukio, 3,836,920.

Takahashi, Akio, to Hooker Chemical Corporation. Vinyl halide terpolymer and bulk process for preparation. 3,836,510, Cl. 260-78.50r.

Takahashi, Hidetoshi: *See—*
Oshima, Susumu; and Takahashi, Hidetoshi, 3,835,595.

Takahashi, Masaaki, to NAC Incorporated. Pattern discrimination system using television. 3,836,710, Cl. 178-6.800.

Takahashi, Susumu: *See—*
Ito, Ryosuke; and Takahashi, Susumu, 3,836,715.

Takamiya, Hiroshi: *See—*
Asano, Tetsumasa; Takamiya, Hiroshi; and Morimoto, Yoshinobu, 3,835,950.

Takarada, Osamu: *See—*
Sakamoto, Teruya; Nishimura, Takemi; and Takarada, Osamu, 3,836,011.

Takase, Yoshiyuki: *See—*
Minami, Shinsaku; Matsumoto, Jun-Ichi; Shimizu, Masanao; and Takase, Yoshiyuki, 3,836,528.

Takashima, Ben Tsutomu: *See—*
Pao, John; Wang, Raymond; Takashima, Ben Tsutomu; Pon, Chuck Y.; and Kanetake, Thomas T., 3,836,959.

Takayasu, Tatsunori; and Higashi, Kouzi, to Hokuriku Electric Industry Co., Ltd. Fuse and resistor device. 3,836,883, Cl. 337-163.000.

Taketo, Kiyoshi; Ito, Toshio; and Kishimoto, Fikutaro, to Mitsubishi Denki Kabushiki Kaisha. Induction heating apparatus having a cover plate for minimizing thermal expansion effects. 3,836,744, Cl. 219-10.490.

Takeuchi, Norisada: *See*—
Kusano, Haruo; and Takeuchi, Norisada, 3,836,981.

Takishima, Yoshiyuki: *See*—
Hasegawa, Goro; Nakamoto, Soichi; Takishima, Yoshiyuki; Mashimo, Yukio; Taguchi, Tatsuya; Nakamura, Zenzo; and Taguchi, Tetsuya, 3,836,922.

Tam, John: *See*—
Horowitz, Leonard; and Tam, John, 3,836,009.

Tamai, Yasuo, to Fuji Photo Film Company, Ltd. Imaging systems. 3,836,384, Cl. 117-37.0le.

Tanaka, Masaho: *See*—
Nonaka, Kohei; Tanaka, Masaho; Maki, Takeshi; Harada, Ikuo; and Hamasaki, Masafumi, 3,836,168.

Tanaka, Yoshiaki: *See*—
Matsuda, Kazuo; Tanaka, Yoshiaki; and Aritaki, Hirakazu, 3,836,493.

Tantraporn, Wirojana: *See*—
Yu, Se Puan; and Tantraporn, Wirojana, 3,836,872.

Tarutani, Satoshi. Means for preventing driving chain from coming off multi-speed transmission front gear for bicycle. 3,835,729, Cl. 74-611.000.

Tashjian, Albert: *See*—
Shnitkin, Harold; Tashjian, Albert; and Shubel, Edward J., 3,836,973.

Taylor, Don A. Molding apparatus. 3,836,307, Cl. 425-251.000.

Taylor, Victor E.; Choate, Wallace R.; Banachowski, Stanley; Johnson, Robert W.; and Faison, Robert C., to Warner & Swasey Company, The. Punch press workholder. 3,835,743, Cl. 83-146.000.

Taylor, Wilson G. Device for pre-locating the thumb and finger hole placements in a bowling ball. 3,835,545, Cl. 33-174.00f.

Tchang, Liang-Ing; and Dolezon, Jean, to Campagnie des Lampes. Two-Pole electronic starter for fluorescent lamps. 3,836,817, Cl. 315-100.000.

Teach, Eugene G.: *See*—
Baker, Don R.; and Teach, Eugene G., 3,836,564.

Teague, Roger W.; and Snyder, Richard Paul Largo, to General Signal Corporation. System and apparatus for cleaning bar grid. 3,836,463, Cl. 210-162.000.

Technilec: *See*—
Larsile, Jacques, 3,836,885.

Ted. Bildplatten Aktiengesellschaft: *See*—
Wilisch, Jurgen; Goetze, Rudolf; Jaeck, Frank; Nackmayr, Dietrich; Rehberg, Heinz; and Thuy, Hans-Joachim, 3,836,731.

Teed, Richard K.: *See*—
Terry, Roy P., Jr.; Teed, Richard K.; and Shirer, S. Ross, 3,836,421.

Teeri, Niilo Heikki. Belleville disk spring pillar assembly. 3,836,195, Cl. 297-162.000.

Teichner, Robert W.: *See*—
Haitz, Roland H.; Sedlewicz, Paul G.; Stirrup, Keith A.; Hilbiber, David F.; and Teichner, Robert W., 3,836,793.

Teijin Limited: *See*—
Kishida, Takashi; and Terano, Masateru, 3,835,632.
Nakanishi, Hajime; and Kawashima, Kohei, 3,835,636.

Tektronix, Inc.: *See*—
Durecka, John; and Crosby, Philip S., 3,836,811.

Teldix GmbH: *See*—
Leiber, Heinz, 3,836,206.

Tele Speed Communications, Inc.: *See*—
Matschke, Arthur L.; and Horowitz, Jack W., 3,836,880.

Telle, Otto; Molls, Hans-Heinz; and Fetting, Karl-Ernst, to Bayer Aktiengesellschaft. Ectoparasiticidal compositions and process for their preparation. 3,836,649, Cl. 424-203.000.

Teller, Daniel M.; Guinosso, Charles J.; Bell, Stanley C.; and Fenichel, Richard L., to American Home Products Corporation. Aromatic glyoxals, their hydrates and bisulfite addition salts in reducing blood platelet aggregation. 3,836,639, Cl. 424-101.000.

Terada, Masaaki, to Olympus Optical Co., Ltd. Oblique view type endoscope. 3,835,841, Cl. 128-5.000.

Terada, Yasuyuki: *See*—
Abe, Wataru; Muto, Akio; and Terada, Yasuyuki, 3,836,466.

Terai, Kiyoshi; and Masumoto, Isao, to Kawasaki Jukogyo Kabushiki Kasha. Process of welding a high tension steel. 3,836,748, Cl. 219-137.000.

Terano, Masateru: *See*—
Kishida, Takashi; and Terano, Masateru, 3,835,632.

Terry, Roy P., Jr.; Teed, Richard K.; and Shirer, S. Ross; deceased (by Shirer, Pauline H.; executrix), to Riegel Textile Corporation. Weather strip. 3,836,421, Cl. 161-63.000.

Tersch, James R. Suntanning tub. 3,835,482, Cl. 4-177.000.

Texaco Inc.: *See*—
Cole, Edward L.; Hess, Howard V.; and Franz, William F., 3,836,427.

Texas Instruments, Incorporated: *See*—
Kilby, Jack S., 3,835,530.
McBride, Lyle E., Jr., 3,835,659.
Portnoy, William M.; Waters, Warren P.; and Wisman, Emery C., 3,836,991.
Pruett, George R., 3,836,399.

Teyssie, Philippe: *See*—
Codet, Georgis; Dawans, Francois; De Charentenay, Francois-Xavier; and Teyssie, Philippe, 3,836,444.

Thermon Manufacturing Company: *See*—
Downing, Kenneth G., 3,836,699.

Thiel, Alfons Wilhelm. Thermal forming apparatus. 3,836,309, Cl. 425-383.000.

Thistlethwaite, Alan; and Weissman, Arthur. Adjustable structures that frame or support pictures or panels of various dimensions. 3,835,562, Cl. 40-155.000.

Thoman, Charles J., to Seco Manufacturing, Inc. Hose rack assembly. 3,835,879, Cl. 137-355.180.

Thomann, Helmut: *See*—
Guntersdorfer, Max; and Thomann, Helmut, 3,836,877.

Thomas & Betts Corporation: *See*—
Bawa, Jaspal S., 3,836,698.
Izraeli, Hyman, 3,836,941.

Thomas, Jerry D.; and Griffith, Cecil B., to Republic Steel Corporation. Method of producing leaded steel. 3,836,359, Cl. 75-129.000.

Thomason, Ivor L. Diver's light apparatus. 3,836,762, Cl. 240-26.000.

Thompson, David F.: *See*—
Szeverenyi, Nikolaus A.; and Thompson, David F., 3,836,882.

Thompson, Eugene D.: *See*—
Howe, Milton A., Jr.; Dexter, Everett H.; and Thompson, Eugene D., 3,835,993.

Thompson, Phil W.; Thompson, Ralph F.; and Gottreu, Harold G. Hide pulling machine. 3,835,502, Cl. 71-21.000.

Thompson, Ralph F.: *See*—
Thompson, Phil W.; Thompson, Ralph F.; and Gottreu, Harold G., 3,835,502.

Thompson, Ronald J.; and MacKenzie, Robert D., to Richardson-Merrell Inc. Two compartment locking sampling syringe. 3,835,835, Cl. 128-2.00f.

Thoreson, Gene A.; Ley, Richard A.; Miller, Cardell E.; and Emery, Lewis A., to Strong-Scott Mfg. Co., The. Tumbling apparatus for blending finely divided dry materials. 3,836,125, Cl. 259-3.000.

Thuy, Hans-Joachim: *See*—
Wilisch, Jurgen; Goetze, Rudolf; Jaeck, Frank; Nackmayr, Dietrich; Rehberg, Heinz; and Thuy, Hans-Joachim, 3,836,731.

Tiefert, Karl H., to Raytheon Company. Semiconductor devices manufacture. 3,836,446, Cl. 204-192.000.

Tilp, Robert F.; Fitzpatrick, William E.; and Cubitt, Robert B., to Rapid-American Corporation, mesne. Bulk package incorporating movable dispenser insert for individual dispensing of substantially wet sheets from stack. 3,836,044, Cl. 221-55.000.

Timmer, Floris: *See*—
Almqvist, Lars Ebbe; and Timmer, Floris, 3,836,780.

Timmons, Albert S. Camper loading and unloading device. 3,836,030, Cl. 214-515.000.

Tinlin, Frank: *See*—
Appleton, Anthony Derek; and Tinlin, Frank, 3,835,663.

Tintorri, Terence A. Controlled use chess game apparatus. 3,836,152, Cl. 273-136.00f.

Tishura, Vladimir Ivanovich: *See*—
Sakharnov, Vasily Alexeevich; Popov Alfred Nikolaevich; Tishura, Vladimir Ivanovich; Galyan, Boris Afanasievich; and Skulsky, Jury Valentinovich, 3,836,746.

Tixier, Rene: *See*—
Wirth, Pierre-Charles; and Tixier, Rene, 3,836,433.

Tjutjunnikov, Jury Borisovich: *See*—
Skornyakov, Jury Pavlovich; Tjutjunnikov, Jury Borisovich; Petrukhno, Anatoly Semenovich; and Schelkunov, Filipp Savelievich, 3,836,435.

Tobey, Alton E. Abrasion tool. 3,835,598, Cl. 51-396.000.

Tobishima Kensetsu Kabushiki Kaisha: *See*—
Hokao, Zenjiro; Shibata, Teijiro; and Yasukabe, Siro, 3,835,937.

Todd, Albert Alexander: *See*—
Einthoven, Willem Gerard; Schilp, William Henry; and Todd, Albert Alexander, 3,836,997.
Schilp, William Henry; and Todd, Albert Alexander, 3,836,996.

Tokico Ltd.: *See*—
Haraikawa, Tetsuo, 3,835,970.

Tokushige, Masahiro: *See*—
Nakamura, Shoji; Matsufuji, Akira; Tokushige, Masahiro; and Kato, Kunihiro, 3,836,325.

Tokyo Shibarua Electric Co., Ltd.: *See*—
Ichinose, Noboru; and Yokomizo, Yuji, 3,836,483.

Tokyo Shibaura Electric Company, Ltd.: *See*—
Okuda, Nobuo; and Kunikyo, Tomoo, 3,836,902.

Tolleson, Thomas H.: *See*—
Milette, Kenneth A.; Garavelli, Frank D.; and Tolleson, Thomas H., 3,836,194.

Tolman, Richard L.; and Sidwell, Robert W., to ICN Pharmaceuticals, Inc. Anti viral compositions containing 3-deaza nuclcosides. 3,836,645, Cl. 424-180.000.

Tomelleri, Giordano, to FMC Corporation. Apparatus for destoning and halving fruit. 3,835,765, Cl. 99-553.000.

Tomizawa, Kazutaka: *See*—
Kataoka, Shoei; Hashizume, Nobuo; Tomizawa, Kazutaka; Morisue, Mititada; and Komamiya, Yasuo, 3,836,989.

Toray Industries, Inc.: *See*—
Kajimoto, Tsunesuke; and Wakamatsu, Shigeru, 3,836,481.

Torplund, Lorna A. Method for forming wax ornaments on a wire screen. 3,836,411, Cl. 156-59.000.

Toshimura, Fumio: *See*—

Ohara, Sigeo; Toshimura, Fumio; and Sugai, Kazuhiko, 3,836,723.
Toth, Istvan: *See—*
Frey, Walter; and Toth, Istvan, 3,836,546.
Toth, Istvan, to Sandoz Ltd. Nitration of anthraquinone. 3,836,547, Cl. 260-369.000.
Touchette, Albert Francis; and Hakanson, Nils L., to Scott Paper Company. Microfiche duplicator. 3,836,252, Cl. 355-100.000.
Touchstone, Roy H. Quick slack adjuster for locomotive brakes. 3,835,969, Cl. 188-197.000.
Touchstone, Roy H. Repair device for locomotive hood door latches. 3,836,185, Cl. 292-1.000.
Toudo, Kenji: *See—*
Ikegami, Kazutoshi; Yamamoto, Mitsuoki; Toudo, Kenji; and Miyanaka, Motosi, 3,836,316.
Toumaala, Jorma Aarne Kullervo, to A. Ahlstrom Osakeyhtio. Apparatus for outside cleaning of boiler tubes. 3,835,817, Cl. 122-379.000.
Townsend Engineering Company: *See—*
Townsens, Ray T.; and Beasley, Donald L., 3,835,503.
Townsens, Ray T.; and Beasley, Donald L., to Townsend Engineering Company. Apparatus for encasing a product. 3,835,503, Cl. 17-35.000.
Toye, Frederick D.; and Toye, Frederick N. Coded card employing differential translucencies. 3,836,754, Cl. 235-61.12n.
Toye, Frederick N.: *See—*
Toye, Frederick D.; and Toye, Frederick N., 3,836,754.
Toyoda Koki Kabushiki Kaisha: *See—*
Oshima, Susumu; and Takahashi, Hidetoshi, 3,835,595.
Toyoda, Taro. Waist-size adjustable trousers. 3,835,473, Cl. 2-237.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Ishikawa, Masakazu; and Itou, Sadayoshi, 3,835,884.
Transfer Systems Incorporated: *See—*
Jones, Cecil Roy, 3,836,121.
Traunecker, Werner: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Zeile, Karl; Engelhardt, Albrecht; and Traunecker, Werner, 3,836,666.
Travis, Bobby J. Tube bundle extractor. 3,836,015, Cl. 214-1.00p.
Trawinski, Helmut Franz. Method and apparatus for discharing the waste as well as enhancing the flocculation of the suspension and moving the waste in solid jacket centrifuges. 3,836,070, Cl. 233-7.000.
Traxler, Alexandr Gustavovich: *See—*
Perelmutr, Alexandr Semenovich; Berlin, Alexandr Zinovievich; Gorlin, Igor Konstantinovich; and Traxler, Alexandr Gustavovich, 3,836,129.
Trebillon, Emile; and Wetroff, Georges, to Rhone-Progil. Process for preparing solid telomers and cotelomers. 3,836,515, Cl. 260-87.50r.
Trecker, David John: *See—*
Colomb, Henry Octave, Jr.; and Trecker, David John, 3,836,509.
Trees, James C., to La Salle Machine Tool, Inc. Machining apparatus. 3,835,739, Cl. 82-20.000.
Trelewsky, Heinz-Guenter: *See—*
Hartmann, Heinrich; Stelter, Siegfried; and Trelewsky, Heinz-Guenter, 3,835,997.
Trent, Lamartine C.; and Reed, Frank L. Amusement device. 3,836,143, Cl. 273-1.00r.
Tri-Matic, Inc.: *See—*
Purtell, Rufus J., 3,836,285.
Trigg, Harry E. Air-operated traffic counter. 3,836,071, Cl. 235-99.00a.
Tringali, Dominick; and Dillard, John W., to Universal Business Machines, Incorporated. Time recorder. 3,836,915, Cl. 346-104.000.
Tripodi, Theodore. Electric fish scaler. 3,835,504, Cl. 17-66.000.
Triquet, Christian: *See—*
Lux, Benno; Funk, Roland; Schachner, Herbert; and Triquet, Christian, 3,836,392.
Tristram, Edward W.; and ten Broeke, Jan, to Merck & Co., Inc. Dehalogenation of dihalo-5H-dibenzocycloheptenones using chromoun chloride. 3,836,585, Cl. 260-590.000.
Troester, Thomas F.; and Rike, Russell E., to Dayton-Walther Corporation. Disk type brake. 3,835,961, Cl. 188-71.900.
Tromp, Henricus: *See—*
Schwarz, Wilhelm; Tromp, Henricus; and Heinz, Winfried, 3,835,790.
Tropel, Inc.: *See—*
Munnerlyn, Charles R.; and Trow, William H., 3,836,238.
Trow, William H.: *See—*
Munnerlyn, Charles R.; and Trow, William H., 3,836,238.
TRW Inc.: *See—*
Bhuta, Pravin G.; Johnson, Robert L.; Graham, Douglas J.; and Aprahamian, Robert, 3,836,950.
Kurland, Richard M.; and Fruktow, Gelb N., 3,836,979.
Mallinckrodt, Charles O., 3,836,886.
Tsai, Hu-Chu: *See—*
Sokol, Phillip Edward; and Tsai, Hu-Chu, 3,836,326.
Tschentscher, Alfred. Guide for winding tread on transverse spools. 3,836,087, Cl. 242-43.000.
Tsubouchi, Kenjiro: *See—*
Watanabe, Tadashi; Murata, Kouichiro; and Tsubouchi, Kenjiro, 3,836,492.
Tsunoda, Norimasa; and Saito, Tsutomu. Ultrasonic apparatus for making a ball point pen. 3,836,062, Cl. 228-1.000.
TUC Industries, Inc.: *See—*
Becky, Raymond, 3,836,839.
Tuohey, Paul F.: *See—*
Gracia, Robert F.; Laughrey, Richard A.; and Tuohey, Paul F., 3,835,780.
Turck, Ulrich, to Chemische Werke Huels, A.G. Process for the production of high surface tension speck-free, heat-polymerized synthetic resin dispersions. 3,836,497, Cl. 260-29.7sq.
Turner, Edgar P. Breath warming devices. 3,835,853, Cl. 128-212.000.
Turner, John O., to Sun Research and Development Company. One-step synthesis of caprolactam. 3,836,523, Cl. 260-239.30a.
Turner, Paul C.: *See—*
Abbatiello, Leonard A.; Hewgley, Robert E., Jr.; and Turner, Paul C., 3,836,834.
Tuuri, Elmer W. Prefabricated and demountable building. 3,835,602, Cl. 52-82.000.
Tyco Laboratories, Inc.: *See—*
Gaines, Lewis H., 3,836,403.
U. S. Philips Corporation: *See—*
Frens, Gerrit; Van Den Boomgaard, Jan; and Van Suchtelen, Jaap, 3,836,804.
Heck, Copnelis Johannes Adrianus Gerardus, 3,836,816.
Johanns, Johannes Hendricus Maria; De Boer, Thijs Johannes; De Haan, Edward Fokko; Van Gelder, Zeger; and Mattheij, Mathieu Martinus Maria Petrus, 3,836,810.
Reifenschweiler, Otto, 3,836,785.
UBE Industries, Ltd.: *See—*
Masaki, Mitsuo; Uchida, Masaru; Oda, Taizi; and Yamamoto, Koichi, 3,836,525.
Yamada, Keisho; Umemura, Sumio; Ohdan, Kyoji; and Fukuda, Kazuo, 3,836,586.
Uchida, Masaru: *See—*
Masaki, Mitsuo; Uchida, Masaru; Oda, Taizi; and Yamamoto, Koichi, 3,836,525.
Uchiyama, Takashi; Taguchi, Tetsuya; and Mashimo, Yukio, to Canon Kabushiki Kaisha. Exposure control system for flash photography. 3,836,920, Cl. 354-27.000.
Uddrich, Peter: *See—*
Schroeder, Guenter; Gaenzler, Wolfgang; Uddrich, Peter; and Babuliak, Josef, 3,836,551.
Ueda, Atsushi; and Ishii, Mitsuaki, to Mitsubishi Denki Kabushiki Kaisha. Control system for electric installations on vehcile. 3,836,887, Cl. 340-163.000.
Ueno, Chozaburo, to Kawasaki Steel Corporation. Prefabricated water tank. 3,835,605, Cl. 52-169.000.
Ujiie, Akira, to Mitsubishi Jukogyo Kabushiki Kaisha. Process for producing metallic articles by electroslag remelting. 3,835,914, Cl. 164-52.000.
Ujiie, Akira, to Mitsubishi Jukogyo Kabushiki Kaisha. Apparatus for electroslag remelting to produce tubular bodies. 3,835,916, Cl. 164-252.000.
Ultra Electronics Limited: *See—*
Lamden, Ralph James, 3,836,893.
Ulyanov, Lev Petrovich; and Karelin, Alexei Kuzmich. Quick response angle transducer. 3,836,260, Cl. 356-152.000.
Umemura, Sumio: *See—*
Yamada, Keisho; Umemura, Sumio; Ohdan, Kyoji; and Fukuda, Kazuo, 3,836,586.
Unimation, Inc.: *See—*
Dunne, Maurice J., 3,835,750.
Union Carbide Corporation: *See—*
Chu, Nan S., 3,836,512.
Colomb, Henry Octave, Jr.; and Trecker, David John, 3,836,509.
Gottschalk, Lawrence A., 3,835,564.
Johnson, Robert N.; and Karol, Frederick J., 3,836,595.
Prokai, Bela, 3,836,559.
Prokai, Bela; and Kanner, Bernard, 3,836,560.
Wheeler, Marshall L., Jr., 3,836,598.
Union Oil Company of California: *See—*
Fenton, Donald M., 3,836,553.
Young, Dean Arthur, 3,836,561.
Union Special Corporation: *See—*
Specht, Thomas F.; and Babecki, Robert J., 3,835,691.
Uniroyal A.G.: *See—*
Pasch, Lambert; and Wagemann, Heinz, 3,836,306.
Uniroyal, Inc.: *See—*
Miceli, Angelo S., 3,835,890.
Uniroyal, Ltd.: *See—*
Ims, Horst O. H., 3,836,022.
United Aircraft Corporation: *See—*
Lee, Richard E., 3,836,279.
Mandelbaum, William; and Violette, John A., 3,836,282.
Smith, David C.; and Solomon, Peter R., 3,836,867.
Von Hardenberg, Paul Warren; and Molnar, George Anthony, 3,836,100.
United Aircraft of Canada Limited: *See—*
Dunthorne, Hector B., 3,836,156.
United Kingdom Atomic Energy Authority: *See—*
Wilson, John Henry, 3,835,658.
United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Marshall, Frank Graham; and Paige, George Sydney, 3,836,876.
United States of America
Agriculture: *See—*

Kenney, Harold E.; Donahue, Edward T.; and Maerker, Gerhard, 3,836,468.
Mayer, Mayer, Jr.; Kotter, James I.; Salaun, Harold L., Jr.; and Brown, Roger S., 3,835,638.
Air Force: *See—*
Conway, William H.; and Aukland, Jerry C., 3,836,972.
van Patten, Robert E., 3,835,702.
Army: *See—*
Arsem, Collins; and Algor, Marshall M., 3,836,963.
Bush, Clarence C., 3,835,703.
Cowett, Philip M., Jr., 3,836,836.
Johnson, Ronald F., 3,836,952.
Miller, Harold C.; Cranford, Wilbert W., Jr.; and Brophy, James J., 3,835,784.
Atomic Energy Commission: *See—*
Abbatiello, Leonard A.; Hewgley, Robert E., Jr.; and Turner, Paul C., 3,836,834.
Koehler, Helmut A.; Redhead, David L.; and Clough, George A., 3,836,865.
Parker, Earl R.; and Zackey, Victor F., 3,836,407.
Strauss, Bruce P., 3,836,404.
Navy: *See—*
Bickel, John E.; and Gallenberger, Robert J., 3,836,971.
Frisbee, Belmont Jr., 3,836,966.
Galloway, Glen L., 3,836,791.
Geren, Keith E.; Papineau, Milton D.; and Routh, Claude C., 3,836,951.
Hall, Joseph F., Jr., 3,836,232.
O'Neill, Edward T.; Brennan, William M.; and Kriechbaum, Gerhard K., 3,836,099.
Pomper, William J.; Wilhelm, Charles G.; and Yancey, Leonard M., 3,836,714.
Wilde, Hans J.; and Viele, Verne R., 3,836,225.
United States Pipe and Foundry Company: *See—*
Battle, Billy J., 3,836,183.
United States Surgical Corporation: *See—*
Noiles, Douglas G., 3,836,116.
Univerferth Manufacturing Company, Inc.: *See—*
Bonomo, Richard S., 3,836,202.
Universal Business Machines, Incorporated: *See—*
Tringali, Dominick; and Dillard, John W., 3,836,915.
Universal Oil Products Company: *See—*
Gleim, William K. T., 3,836,452.
University of California, The Regents of the: *See—*
Morrison, H. Frank, 3,836,841.
University of Minnesota, The Regents of the: *See—*
Child, Francis W., 3,835,475.
Upjohn Company, The: *See—*
Johnson, Herbert G.; Wright, John B.; Hall, Charles M.; and Warner, Donald T., 3,836,541.
Kelly, Robert C., 3,836,530.
Sharp, John C., 3,836,657.
Upright, Robert. Snowball forming device. 3,836,308, Cl. 425-318.000.
Urry, Wilbert Herbert; and Mullenbach, Guy Towns, to Commercial Solvents Corporation. Syntehsis of zearalanes II and related compounds and intermediates useful in the syntheses thereof. 3,836,544, Cl. 260-343.20r.
U.S. Philips Corporation: *See—*
Board, Kenneth, 3,836,988.
De Jonge, Frederik Ate, 3,836,895.
Hillekens, Conrardus Ludovicus Anthonius, 3,836,727.
Keimpema, Keimpe Klaas; Van der Veen, Marcus Fokke; Rietveld, Andreas Fredericus; and Schoo, Jan Andreas, 3,835,551.
Nederlof, Anton Marie, 3,835,648.
Staas, Frans Adrianus; and Severijns, Adrianus Petrus, 3,835,662.
van der Aa, Herman Henricus Maria; van Giessel, Robby; and Neelen, Gregorius Theodorus Maria, 3,835,714.
van Heelsbergen, Teunis Robert, 3,836,831.
Van Kamp, Harmen; Westerhof, Pieter; and Morsink, Lucas, 3,836,526.
USM Corporation: *See—*
Klein, Wilhelm, 3,835,496.
Meyer, Engelbert A., 3,836,118.
Revill, Howard B., 3,835,558.
Uyeda, Tim Minoru: *See—*
Milette, Kenneth Arthur; and Uyeda, Tim Minoru, 3,835,479.
Valley Bank and Trust Company, mesne: *See—*
Austin, Richard A., 3,836,028.
Van Bouwel, Leo Paul: *See—*
Stievenart, Emile Frans; Van Bouwel, Leo Paul; and Plessers, Hendrik Sylvester, 3,836,783.
Van Den Boomgaard, Jan: *See—*
Frens, Gerrit; Van Den Boomgaard, Jan; and Van Suchtelen, Jaap, 3,836,804.
van der Aa, Herman Henricus Maria; van Giessel, Robby; and Neelen, Gregorius Theodorus Maria, to U.S. Philips Corporation. Device comprising a liquid-supported rolling diaphragm seal. 3,835,714, Cl. 74-18.200.
van der Horst, Eberhard, to Monforts, A. Shaft bearing assembly of a machine tool. 3,836,210, Cl. 308-4.00r.
Van Der Stelt, Cornflis, to N.V. Koninklijke Pharmaceutische Fabrieken v/h Brocades-Stheeman & Pharmacia. 1-(Dimesitylmethyl) imidazole. 3,836,540, Cl. 260-309.000.
Van der Veen, Marcus Fokke: *See—*
Keimpema, Keimpe Klaas; Van der Veen, Marcus Fokke; Rietveld, Andreas Fredericus; and Schoo, Jan Andreas, 3,835,551.
Van Dolah, Harry J.: *See—*
Ault, Alfred S.; Johnson, Le Roy A.; and Van Dolah, Harry J., 3,836,373.
Van Gelder, Zeger: *See—*
Johanns, Johannes Hendricus Maria; De Boer, Thijs Johannes; De Haan, Edward Fokko; Van Gelder, Zeger; and Mattheij, Mathieu Martinus Maria Petrus, 3,836,810.
van Giessel, Robby: *See—*
van der Aa, Herman Henricus Maria; van Giessel, Robby; and Neelen, Gregorius Theodorus Maria, 3,835,714.
van Heelsbergen, Teunis Robert, to U.S. Philips Corporation. Plural motor tension controlled tape drive. 3,836,831, Cl. 318-7.000.
Van Kamp, Harmen; Westerhof, Pieter; and Morsink, Lucas, to U.S. Philips Corporation. Novel 1,2-methylene-9β-10Δ-steroid compounds, pharmaceutical preparations which contain the novel substances as active ingredients, and methods of producing the said compounds and preparations. 3,836,526, Cl. 260-239.55r.
van Patten, Robert E., to United States of America, Air Force. Multiaxis bio-mechanical force measuring device. 3,835,702, Cl. 73-133.00r.
Van Suchtelen, Jaap: *See—*
Frens, Gerrit; Van Den Boomgaard, Jan; and Van Suchtelen, Jaap, 3,836,804.
Van Wicklin, Warren A., Jr., to Ford Motor Company. Brake system proportioning valve. 3,836,204, Cl. 303-6.00c.
Van Wieringen, Gijsbertus L., to N.V. Nederlandse Metallindustrie Polynorm. Seal joint between two identical profiled sections and the associated mitre-joint construction. 3,835,616, Cl. 52-758.00b.
Vandemark, William Jacob; and Wood, Michael Stuart, to Foseco International Limited. Investment casting. 3,835,913, Cl. 164-35.000.
Vapor Corporation: *See—*
Zell, Felician A., 3,836,115.
Varga, Andrew. Fluid meter. 3,835,706, Cl. 73-254.000.
Varta Aktiengesellschaft: *See—*
Niklas, Hans; Knabenbauer, Wolfgang; and Rabenstein, Heinrich, 3,836,401.
Vasilantone, Michael. Printing apparatus. 3,835,773, Cl. 101-122.000.
Vepa AG: *See—*
Fleissner, Heinz, 3,835,490.
Fleissner, Heinz; and Wilhelm, Ernst, 3,835,671.
Verdol S.A.: *See—*
Bassi, Dario, 3,835,895.
Vereecke, Frank J.: *See—*
Hemsath, Klaus H.; Vereecke, Frank J.; and Ferguson, Norman T., 3,836,320.
Vermilyea, Peter W.: *See—*
Schrader, Victor H.; Polney, Richard J.; and Vermilyea, Peter W., 3,835,511.
Vernede, Louis Antoine; Nitzki, Leopold; Liedke, Heinrich; and Schror, Friedrich, to Aktien-Gesellschaft "Weser". Marine cargo vessel. 3,835,802, Cl. 114-43.500.
VFG Vertriebsgesellschaft fur feuerfeste und giesstechnische Erzeugnisse mbH: *See—*
Granitzki, Karl Ernst; Schiefer, Paul; and Hess, Heinrich, 3,836,613.
Viele, Verne R.: *See—*
Wilde, Hans J.; and Viele, Verne R., 3,836,225.
Vilen, Erik O., to Blakeslee, G. S., & Co. Rotating feed table for dishware and the like. 3,836,003, Cl. 210-241.000.
Villari, Frank K. Fenestrated drape with retaining means. 3,835,851, Cl. 128-132.00d.
Villari, Frank K., to Kendall Company, The. Sterile caps for a liquid drainage system and method. 3,835,862, Cl. 128-349.00r.
Villeger, Jean G. Solid heat insulation panel for building. 3,835,611, Cl. 52-621.000.
Violette, John A.: *See—*
Mandelbaum, William; and Violette, John A., 3,836,282.
Vivian, Weston E.: *See—*
Boenke, Clyde O.; Miller, Murray H.; Levine, Michael R.; Rigotte, Victor H.; Vivian, Weston E.; and Hall, William C., 3,836,888.
Volent, Stanley C., to Decor Manufacturing Co., Inc. Method of forming artificial stone. 3,836,619, Cl. 264-131.000.
Volkswagenwerk Aktiengesellschaft: *See—*
Beckmann, Rudolf; and Seelmann-Eggebert, Dietrich, 3,835,826.
Hildebrandt, Christian, 3,836,172.
Von Der Au, Roland George Victor. Orbital planetary multibladed revolving cutter blades. 3,835,630, Cl. 56-295.000.
Von Hardenberg, Paul Warren; and Molnar, George Anthony, to United Aircraft Corporation. Engine mounting arrangement. 3,836,100, Cl. 244-54.000.
Von Koch, Arwed, to Daimler-Benz Aktiengesellschaft. Rapid-stopping system for transmissions. 3,836,832, Cl. 318-265.000.
Vossnacke, Juergen: *See—*
Hartwig, Karl; and Vossnacke, Juergen, 3,836,322.
Vossos, Peter H.: *See—*
Payne, Charles C.; and Vossos, Peter H., 3,836,391.
Vyzkumny Ustav Pletarsky: *See—*
Piller, Bohumil; Lacko, Vladimir; Kochta, Zdenek; and Koudelka, Bedrich, 3,835,512.
Wa-Konsult Wassberg & Wassberg AB: *See—*
Wassberg, Yngve Adolf Eugen; and Wassberg, Sven-Ake Gustaf-Adolf, 3,835,794.

Wache, Lothar: *See—*
Behrens, Dieter; and Wache, Lothar, 3,836,859.
Wade, Robert M.: *See—*
Ling, Ting H.; Wade, Robert M.; and Solomon, Marwich, H., 3,836,482.
Wade, William T.: *See—*
De Simone, Roy R.; Donofrio, Nicholas M.; Linton, Richard H.; Sonoda, George; and Wade, William T., 3,836,892.
Wagemann, Heinz: *See—*
Pasch, Lambert; and Wagemann, Heinz, 3,836,306.
Wagner Electric Corporation: *See—*
Falk, Edward J., 3,835,962.
Wagner, George M.; and Sitgreaves, Norman E., to Hooker Chemical Corporation. Method of introducing air permeability into a non-porous continuous film and resultant film. 3,836,423, Cl. 161-159.000.
Wahlgren, Wallace W.; and Douglas, Ellwood S., to Rucker Company, The. Ground fault protective system. 3,836,821, Cl. 317-18.00d.
Wakamatsu, Shigeru: *See—*
Kajimoto, Tsunesuke; and Wakamatsu, Shigeru, 3,836,481.
Walgenbach, David D.: *See—*
Kensler, Daniel L., Jr.; and Walgenbach, David D., 3,836,655.
Wallace, Richard A.: *See—*
Bates, Clayton W.; and Wallace, Richard A., 3,836,784.
Waller, Tracy N.: *See—*
Guzman, Adolfo M.; Hu, Paul Y.; and Waller, Tracy N., 3,836,774.
Wallis, Craig; and Melnick, Joseph L., to Carborundum Company, The. Water purification means. 3,836,458, Cl. 210-23.000.
Wallshein, Melvin. Orthodontic appliance. 3,835,539, Cl. 32-14.00a.
Walser, Armin: *See—*
Earley, James Valentine; Fryer, Rodney Ian; and Walser, Armin, 3,836,521.
Walters, William D., to Cogsdill Tool Products, Inc. Burnishing tools for interior and exterior surfaces. 3,835,517, Cl. 29-90.000.
Wang, Raymond: *See—*
Pao, John; Wang, Raymond; Takashima, Ben Tsutomu; Pon, Chuck Y.; and Kanetake, Thomas T., 3,836,959.
Wankel GmbH: *See—*
Steinwart, Johannes; and Rup, Max, 3,836,294.
Wanlass, Frank M.: *See—*
Seely, John Leland; and Wanlass, Frank M., 3,836,862.
Ward, Marvin T. Disc brake spreader. 3,835,522, Cl. 29-239.000.
Wardwell, Charles H.; and Holcomb, Norman L., to Research Engineering & Manufacturing, Inc. Localized heat treating machine. 3,836,743, Cl. 219-10.430.
Warner & Swasey Company, The: *See—*
Fullerton, Baxter T., 3,835,516.
Taylor, Victor E.; Choate, Wallace R.; Banachowski, Stanley; Johnson, Robert W.; and Faison, Robert C., 3,835,743.
Warner, Donald T.: *See—*
Johnson, Herbert G.; Wright, John B.; Hall, Charles M.; and Warner, Donald T., 3,836,541.
Warner-Lambert Company: *See—*
McNamara, Thomas F.; and Perper, Timothy P., 3,836,396.
Morrison, Glenn C.; and Cetenko, Wiaczeslaw A., 3,836,536.
Whitham, Keith A., 3,835,588.
Warren, Brian Thomas: *See—*
Collier, Henry Oswald Jackson; and Warren, Brian Thomas, 3,836,667.
Washburn, Malcolm E.: *See—*
Richerson, David W.; and Washburn, Malcolm E., 3,836,374.
Wasil, Joseph J., to Harris-Intertype Corporation. Method of manufacturing a hydrophilic dampening roll. 3,835,597, Cl. 51-289.000.
Wassberg, Sven-Ake Gustaf-Adolf: *See—*
Wassberg, Yngve Adolf Eugen; and Wassberg, Sven-Ake Gustaf-Adolf, 3,835,794.
Wassberg, Yngve Adolf Eugen; and Wassberg, Sven-Ake Gustaf-Adolf, to Wa-Konsult Wassberg & Wassberg AB. Arrangement for detachably interconnecting elements. 3,835,794, Cl. 108-153.000.
Watanabe, Tadashi; Murata, Kouichiro; and Tsubouchi, Kenjiro, to Kansai Paint Co., Ltd. Polymerizable unsaturated reaction product of a diisocyanate and an unsaturated product of a dicarboxylic acid anhydride and an unsaturated monoglycidyl monomer. 3,836,92, Cl. 260-23.0tn.
Water Purification Corporation of America: *See—*
Ellison, Charles V., 3,836,781.
Waters, Warren P.: *See—*
Portnoy, William M.; Waters, Warren P.; and Wisman, Emery C., 3,836,991.
Watrous, Donald L., to General Electric Company. Mounting arrangement for flexible circuit. 3,836,824, Cl. 317-101.00f.
Watson, Kenneth, to Westland Aircraft Limited. Liquid level indicators. 3,835,709, Cl. 73-311.000.
Waxberg, Donald L.: *See—*
Boerwinkle, Fred P.; and Waxberg, Donald L., 3,836,537.
Wean United, Inc.: *See—*
Kent, Francis J.; and Jaworski, George M., 3,835,685.
Maruszczak, Wlodzimierz W., 3,836,088.
Shumaker, Charles Storer, 3,835,681.
Weast, Gerald T., to Clear View Manufacturing Company. Telescopic sight mounting. 3,835,565, Cl. 42-1.00s.
Weaver, Gerald Q.; and Olson, Bradford A., to Norton Company. Sintered silicon carbide. 3,836,673, Cl. 423-345.000.
Weaver, John B., to Armstrong Cork Company. Marbleizing apparatus. 3,836,297, Cl. 425-104.000.
Weber, Heinrich: *See—*
Streck, Roland; and Weber, Heinrich, 3,836,593.
Weber, Karl Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz; deceased (by Hauptmann, Maria; heir), to Boehringer Ingelheim G.m.b.H. Pharmaceutical compositions containing a 5-phenyl-7-irifluoromethyl-1h-1,5-benzodiazepine-24-dione. 3,836,652, Cl. 424-244.000.
Weber, Karl Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, deceased (by Hauptmann, Marie, heir), to Boehringer Ingelheim G.m.b.H. Pharmaceutical compositions containing a 5-phenyl-7-bromo-1h-1,5-benzodiazepine-2,4-(3H,5H)dione. 3,836,653, Cl. 424-244.000.
Weber, Paul E.: *See—*
Hertel, Heinz E.; Kearney, Robert L.; and Weber, Paul E., 3,836,251.
Weber, Paul E., to Bell & Howell Company. Optical imaging system of short focal lens. 3,836,249, Cl. 355-51.000.
Weck, Edward & Company, Inc.: *See—*
Hagen, Clarence A., 3,835,858.
Weghaupt, Erich: *See—*
Lambrecht, Dietrich; and Weghaupt, Erich, 3,835,919.
Wegner, Gerhard: *See—*
Jun, Mong-Jon; Penzien, Klaus; and Wegner, Gerhard, 3,836,368.
Wehman, Alan W., to Lorain Products Corporation. Alarm circuit for monitoring the amplitude of A-C voltages. 3,836,854, Cl. 324-133.000.
Weidler, Erhard Alfred: *See—*
Rieger, Hansjorg; and Weidler, Erhard Alfred, 3,835,908.
Weidman, William H., to Harris-Intertype Corporation. Multi-unit rotary press. 3,835,776, Cl. 101-183.000.
Weidner, Peter: *See—*
Muller, Henrik; and Weidner, Peter, 3,836,722.
Weinert, Volker, to Agfa-Gevaert Aktiengesellschaft. Photographic color printing apparatus with improved light terminating mechanism. 3,836,247, Cl. 355-36.000.
Weisker, Alexander; and Smith, Raymond L., Jr., to C & M Manufacturing Company, Inc. Material handling truck apparatus. 3,836,031, Cl. 214-730.000.
Weiss, Martin Joseph: *See—*
Bernady, Karel Francis; Poletto, John Frank; and Weiss, Martin Joseph, 3,836,581.
Weissman, Arthur: *See—*
Thistlethwaite, Alan; and Weissman, Arthur, 3,835,562.
Welcker, Friedrich. Self-cleaning burner cover, especially for household appliances. 3,835,832, Cl. 126-215.000.
Welding Specialties, Inc.: *See—*
Wlos, Paul M., 3,836,747.
Weldotron Corporation: *See—*
Siegel, Leon J., 3,836,828.
Welkowsky, Murray Samuel: *See—*
Lewis, John Henry; Morsell, Arthur Lee; and Welkowsky, Murray Samuel, 3,836,777.
Wellman Bibby Company Limited, The: *See—*
Braggins, George Roderick Derham; and Pooley, Donald Humphrey, 3,835,973.
Wells, Joel D.; Sabin, Albert S.; Kahn, William J.; and Wigner, William K., to Martin Marietta Corporation. Data transmission method and apparatus. 3,836,726, Cl. 179-41.00a.
Wells, Joel Douglas, to Martin Marietta Corporation. Transmitter sequencing method and apparatus. 3,836,974, Cl. 343-208.000.
Weltmer, Wilton W., to Allis-Chalmers Corporation. Mixer pump. 3,836,126, Cl. 259-95.000.
Wendt, William H., III, to Chicago Metal Mfg. Co. Machine for forming holes in angle rings for the like. 3,835,744, Cl. 83-267.000.
Werner, Robert G.: *See—*
Struk, James R.; and Werner, Robert G., 3,836,789.
Westacott, Harry L.: *See—*
Gibbons, Burton C.; and Westacott, Harry L., 3,836,987.
Westerberg, Sven Peter Jonas: *See—*
Gustavsson, Tommy Henning Bruno; Karden, Karl Gosta; and Westerberg, Sven Peter Jonas, 3,836,752.
Westerhof, Pieter: *See—*
Van Kamp, Harmen; Westerhof, Pieter; and Morsink, Lucas, 3,836,526.
Western Electric Company, Incorporated: *See—*
Fowler, William H., 3,836,388.
Westinghouse Air Brake Company: *See—*
Doversberger, Richard A., 3,835,965.
Westinghouse Electric Corporation: *See—*
Cricchi, James R., 3,836,894.
Foster, Karl; and Seidel, Joseph, 3,836,389.
Frisch, Erling; and Andrews, Harry N., 3,836,429.
Frisch, Erling; and Andrews, Harry N., 3,836,430.
Frost, Lawrence W., 3,836,506.
Gross, Marvin C.; Stana, Regis R.; Klem, Franklin D.; and Shaffer, Raymond E., 3,836,457.
Hardman, Carl C., 3,836,397.
Healey, Daniel J., III; and Driscoll, Michael M., 3,836,873.
Heldreth, Robert L., 3,836,001.
Hundstad, Richard L., 3,836,740.
Justice, James W. H., 3,837,003.
Kennedy, Paul G., 3,837,004.

Pollack, William, 3,835,514.
Solymos, Frederick, 3,835,959.

Westland Aircraft Limited: *See—*
Watson, Kenneth, 3,835,709.

Westley, John: *See—*
Stempel, Arthur; and Westley, John, 3,836,516.

Westphal, Georg, Ing. K.G.: *See—*
Westphal, Helmut, 3,835,910.

Westphal, Helmut, to Westphal, Georg, Ing. K.G. Liquid evaporator and operation process therefor. 3,835,910, Cl. 159-23.000.

Wetroff, Georges: *See—*
Trebillon, Emile; and Wetroff, Georges, 3,836,515.

Wharton, Thomas Parker. Pallet construction. 3,835,792, Cl. 108-51.000.

Wheatley, Carl Franklin, Jr.; and Einthoven, Willem Gerard, to RCA Corporation. Semiconductor darlington circuit. 3,836,995, Cl. 357-46.000.

Wheeler, Harold A., to Hazeltine Corporation. Antenna system having a reflector with a substantially open construction. 3,836,977, Cl. 343-815.000.

Wheeler, Marshall L., Jr., to Union Carbide Corporation. Olefinic silicone-organic graft copolymers. 3,836,598, Cl. 260-827.000.

Whelan, James E., to General Motors Corporation. Hydraulic leveling control system. 3,835,949, Cl. 180-41.000.

Whelan, Robert D.: *See—*
Gibson, Richard D.; and Whelan, Robert D., 3,836,911.

Whistler, Charles C., Jr.: *See—*
Kochendorfer, Donald P.; and Whistler, Charles C., Jr., 3,835,661.

Whistler, Charles C., Jr.; and Meyer, Ronald E., to General Motors Corporation. Refrigerator door with removably mounted radio. 3,836,221, Cl. 312-237.000.

Whitaker, Edward G.: *See—*
Cracraft, Larry F.; Oppmann, Richard C.; and Whitaker, Edward G., 3,836,853.
Cracraft, Larry F.; Houser, David E.; and Whitaker, Edward G., 3,836,955.

White, J. Sameul, & Company Limited: *See—*
Slade, Owen George, 3,835,805.

White, Jay E., Jr.: *See—*
Hoffman, John J.; and White, Jay E., Jr., 3,836,763.

White, Joseph, to Compoflex Company Limited. Flexible hose. 3,835,891, Cl. 138-125.000.

White, Robert L.: *See—*
King, Kenneth K.; and White, Robert L., 3,835,667.

White, Warren D., to Cutler-Hammer, Inc. Low angle radio direction finding. 3,836,929, Cl. 343-113.00r.

Whitehead, Richard T.; Luberoff, Benjamin J.; and Sze, Morgan Chuan-Yuan, to Lummus Company, The. Treatment and use of waste effluent streams. 3,836,461, Cl. 210-56.000.

Whitfield, Willis C. Fishing rod and reel assembly holder. 3,835,568, Cl. 43-17.000.

Whitham, Keith A., to Warner-Lambert Company. Lenticular contact lense lathe. 3,835,588, Cl. 51-58.000.

Whiting, Philip C., Jr., to Ludlow Corporation. Thin, flexible barrier material. 3,836,425, Cl. 161-165.000.

Whitlock, Inc.: *See—*
Evans, Arthur J., 3,836,288.

Whitworth, Loraine T. Ellipsoid marker and template tracer. 3,835,541, Cl. 33-21.00c.

Wideman, Lawson G., to Goodyear Tire & Rubber Company, The. Method of cyclotrimerizing 1-butene-3-yne to form 1,2,4-trivinylbenzene. 3,836,602, Cl. 260-669.000.

Wiebe Manufacturing, Inc.: *See—*
Johnson, Ralph Ketchum, 3,835,985.

Wienecke, Franz, to ITT Industries, Inc. Antiskid control system. 3,836,208, Cl. 303-21.00f.

Wienert, Fritz O. Production of pellets. 3,836,354, Cl. 75-3.000.

Wiensz, Klaus; and Bischoff, Friedrich, to Kali Und Salz Aktiengesellschaft. Process for making magnesium oxide and magnesium hydroxide from calcined dolomite and magnesium chloride. 3,836,627, Cl. 432-169.000.

Wightman, Lawrance W., to Emerson Electric Co. Plate spacing fixture for electrostatic air cleaners. 3,836,135, Cl. 269-43.000.

Wigner, William K.: *See—*
Wells, Joel D.; Sabin, Albert S.; Kahn, William J.; and Wigner, William K., 3,836,726.

Wilde, Hans J.; and Viele, Verne R., to United States of America, Navy. Fiber optic scanners. 3,836,225, Cl. 350-6.000.

Wildpaner, Hubert, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method for the production of a mixture with constant component composition made of several starting materials, and a regulating device for carrying out the method. 3,835,873, Cl. 137-3.000.

Wildt Mellor Bromley Limited: *See—*
Findlay, Peter Michael; Savage, Sidney Clifford; Klee, John Michael; and Gamble, Joseph Eric, 3,835,669.

Wiley, John P., to International Business Machines Corporation. Apparatus for exposing lines on a photosensitive surface. 3,836,916, Cl. 354-4.000.

Wilfert, Karl, to Daimler-Benz Aktiengesellschaft. Body for vehicles, especially passenger motor vehicles. 3,836,192, Cl. 296-28.00r.

Wilhelm, Charles G.: *See—*
Pomper, William J.; Wilhelm, Charles G.; and Yancey, Leonard M., 3,836,714.

Wilhelm, Ernst: *See—*
Fleissner, Heinz; and Wilhelm, Ernst, 3,835,671.

Wilhelm, Hans: *See—*
Ricker, Ernst; Sander, Bruno; Schmidt, Franz; Schwartz, Erich; Sperber, Heinrich; and Wilhelm, Hans, 3,836,605.

Wilhelmi, Gerhard, to Ciba-Geigy Corporation. Treatment of wounds. 3,836,644, Cl. 424-180.000.

Wilisch, Jurgen; Goetze, Rudolf; Jaeck, Frank; Nackmayr, Dietrich; Rehberg, Heinz; and Thuy, Hans-Joachim, to Ted. Bildplatten Aktiengesellschaft. Playback device and method for foil-shaped recording carriers. 3,836,731, Cl. 179-100.40r.

Wilkinson, Richard C.; and Hoffmann, Hermann, to American Hoechst Corporation. Water-insoluble disperse azo dyestuffs of cyclic aminobenzaldehyde acetals. 3,836,517, Cl. 260-152.000.

Williams, Cecil E. Pollution-reducing floating exhaust. 3,835,625, Cl. 55-259.000.

Williamson, Karl D. Safety pocket construction. 3,835,474, Cl. 2-251.000.

Willis, Roderick M.; and Oldfather, Charles L. Process for removal of algae, diatoms and organic contaminants from water. 3,836,460, Cl. 210-44.000.

Wilson, Clive W.: *See—*
Metcalfe, Kenneth A.; Clements, Alwin S.; and Wilson, Clive W. 3,836,361.
Metcalfe, Kenneth A.; Clements, Alwin S.; and Wilson, Clive W., 3,836,381.

Wilson, John Henry, to United Kingdom Atomic Energy Authority. Freeze crystallization of saline water with a direct contact refrigerant. 3,835,658, Cl. 62-58.000.

Wilson, Kenneth R. A., to Irvin Air Chute Ltd. Vehicle safety apparatus. 3,836,167, Cl. 280-150.0ab.

Wilson, Thomas B., Jr. Impeller mechanism. 3,835,718, Cl. 74-86.000.

Wilson, Walter Fred. Retractable walls. 3,836,769, Cl. 296-10.000.

Windmoller & Holscher: *See—*
Bosse, Frank, 3,835,756.
Schwarzkopf, August, 3,836,068.

Wingler, Frank: *See—*
Hagemann, Hermann; Wingler, Frank; and Pollheide, Dieter, 3,836,604.

Winn, Ray: *See—*
Ennis, Joseph C.; and Winn, Ray, 3,836,961.

Winston, Charles D.: *See—*
Halasz, Stephen J.; and Winston, Charles D., 3,836,795.

Winter, Henry A., Jr., to Smith International, Inc. Earth drilling apparatus and method. 3,835,940, Cl. 175-85.000.

Winterbottom, Kenneth: *See—*
Barber, Albert John; Massey, Derek James Rowland; McCartney, James; and Winterbottom, Kenneth, 3,836,390.

Wirth, Pierre-Charles; and Tixier, Rene, to Societe Generale de Recherches et d'Applications Scientifiques-Sogeras. Fixation of nitrogenous materials. 3,836,433, Cl. 195-68.000.

Wisman, Emery C.: *See—*
Portnoy, William M.; Waters, Warren P.; and Wisman, Emery C., 3,836,991.

Wlos, Paul M., to Welding Specialties, Inc. Gas welding cable and gun therefor. 3,836,747, Cl. 219-130.000.

Wodenka, Anthony J. Automatic telephone signalling apparatus. 3,836,729, Cl. 179-90.00b.

Woessner, William H.: *See—*
Kirschner, Gerald D.; and Woessner, William H., 3,835,785.

Wohlbier, Gunther: *See—*
Behrens, Herbert; and Wohlbier, Gunther, 3,835,976.

Wojtech, Bernhard: *See—*
Schafer, Lothar; and Wojtech, Bernhard, 3,836,625.

Wolfe, Maynard Frank. Film advancing system for photographic cameras. 3,836,691, Cl. 354-213.000.

Wolff, Willi: *See—*
Hackstein, Karl-Gerhard; Hrovat, Milan; and Wolff, Willi, 3,836,311.

Wolford, Earl W.; and Frazee, Orville P. Magnetic pump. 3,836,289, Cl. 417-415.000.

Wolgemuth, James H., to Ford Motor Company. Exhaust and gas recirculating system. 3,835,827, Cl. 123-119.00a.

Wollar, Burnell J.: *See—*
Polydoris, Nicholas G.; and Wollar, Burnell J., 3,835,543.

Wommack, Joel B., Jr. Alkyl 4-[O-(substituted methyleneamino) phenyl]-3-thioallophanates. 3,836,569, Cl. 260-470.000.

Wood, David R.: *See—*
Harris, John P.; Mantey, John P.; and Wood, David R., 3,836,833.

Wood, James E.: *See—*
Strecker, Larry A.; and Wood, James E., 3,836,695.

Wood, Lawrence M., to Eastman Kodak Company. Exposure control apparatus. 3,836,983, Cl. 354-258.000.

Wood, Michael Stuart: *See—*
Vandemark, William Jacob; and Wood, Michael Stuart, 3,835,913.

Woodall Industries Inc.: *See—*
Hoffman, John J.; and White, Jay E., Jr., 3,836,763.

Woods, Daniel J.: *See—*
Funk, John W.; Merlino, Eugene L., Jr.; and Woods, Daniel J., 3,835,771.

Worden, Owen Winram. Apparatus for splicing cables. 3,836,701, Cl. 174-93.000.

Wright, Barry, Corporation: *See—*
Lowe, Russell T.; Pepi, Jerome S.; and Schubert, Dale W., 3,836,134.

Wright, Carl J.: *See—*
Hoffman, Robert E.; and Wright, Carl J., 3,835,880.

Wright, Donald L.; and Frankenfeld, John W. Topical antifungal 1,3-diols. 3,836,672, Cl. 424-343.000.

Wright, John B.: *See—*
Johnson, Herbert G.; Wright, John B.; Hall, Charles M.; and Warner, Donald T., 3,836,541.

Wright, Ronald S.: *See—*
Adams, Kevin L.; and Wright, Ronald S., 3,836,149.

Wright, Rufus W. Broadband microwave energy absorptive structure. 3,836,967, Cl. 343-18.00a.

Wrue, Richard J., to Bausch & Lomb Incorporated. Apparatus for and method of removing material from a flexible contact lens. 3,835,596, Cl. 51-284.000.

Wunder, Friedrich: *See—*
Krekeler, Hans; Fernholtz, Hans; Freudenberger, Dieter; Schmidt, Hans-Joachim; and Wunder, Friedrich, 3,836,567.

Wurst, Bert, to Bosch, Robert, GmbH. Internal combustion engine torque measuring apparatus providing an electrical control signal. 3,835,733, Cl. 74-866.000.

Wuskell, Joseph P.: *See—*
Briendell, Gordon D.; and Wuskell, Joseph P., 3,836,590.

Wynkoop, Raymond: *See—*
Shang, Jer-Yu; Bisson, Barry A.; and Wynkoop, Raymond, 3,836,342.

Wysocki, Stanislaw; and Chalecki, Janusz. System of pulsators for an electro-ophthalm. 3,835,476, Cl. 3-1.000.

Xaloy Incorporated: *See—*
Saltzman, Gilbert A.; Otani, Tony U.; and Lomax, Donald P., 3,836,341.

Xerox Corporation: *See—*
Adams, James E.; Becker, James H.; and Haas, Werner E. L., 3,836,230.
Eto, Yoshio, 3,835,811.
Goffe, William L., 3,836,362.
Lehman, Richard F., 3,836,244.
Lin, Luke C., 3,836,364.

Xonics, Inc.: *See—*
Lewis, John Henry; Morsell, Arthur Lee; and Welkowsky, Murray Samuel, 3,836,777.

Yadlowsky, Slawko, to General Foods Corporation. Method for enhancing soluble foodstuffs. 3,836,682, Cl. 426-312.000.

Yaeger, Luther LeMasters, to Presciencia, Limited. Laminate for human habitation. 3,836,417, Cl. 161-5.000.

Yamada, Eiji, to Sumitomo Chemical Company, Ltd. Anthraquinone compounds. 3,836,549, Cl. 260-380.000.

Yamada, Keisho; Umemura, Sumio; Ohdan, Kyoji; and Fukuda, Kazuo, to UBE Industries, Ltd. Process for producing acrolein or methacrolein. 3,836,586, Cl. 260-604.00r.

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Kishira, Nozumu, 3,835,956.

Yamamoto, Kazuo: *See—*
Yasui, Koichi; Yamamoto, Kazuo; Itami, Kazuo; Fujisawa, Kiyoshi; and Sasaki, Toshio, 3,836,336.

Yamamoto, Koichi: *See—*
Masaki, Mitsuo; Uchida, Masaru; Oda, Taizi; and Yamamoto, Koichi, 3,836,525.

Yamamoto, Makoto; Fukuda, Tomio; and Nakatake, Masamichi, to Shiba Electric Co., Ltd., and Nippon Hoso Kyokai. Digital Control system. 3,836,756, Cl. 235-150.100.

Yamamoto, Mitsuoki: *See—*
Ikegami, Kazutoshi; Yamamoto, Mitsuoki; Toudo, Kenji; and Miyanaka, Motosi, 3,836,316.
Ikegami, Kazutoshi; Honda, Juichi; Miyanaka, Motosi; and Yamamoto, Mitsuoki, 3,836,857.

Yamanaka, Masami; and Masuda, Yasutoshi, to Yamato Scale Company, Limited. Device for weighing running vehicle. 3,835,945, Cl. 177-134.000.

Yamanaka, Takeharu. Skewering machine. 3,835,761, Cl. 99-421.00h.

Yamashita, Junnosuke; and Negishi, Hideo, to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha. Apparatus for displacing grinding surface of throw-away tip. 3,835,593, Cl. 51-216.0nd.

Yamashita, Seizi; and Onishi, Kazuo, to Hitachi, Ltd. Stator for DC machines. 3,836,801, Cl. 310-154.000.

Yamashita, Shigeru: *See—*
Kobayakawa, Masaki; Yawata, Kazufumi; and Yamashita, Shigeru, 3,836,806.

Yamato Scale Company, Limited: *See—*
Yamanaka, Masami; and Masuda, Yasutoshi, 3,835,945.

Yamazaki, Haruji, to Chuo Denshi Kogyo Co., Ltd. Four channel headphone. 3,836,724, Cl. 179-18.0lr.

Yamazaki, Tetsuya: *See—*
Sumimoto, Toru; Matsushita, Shigeo; Fujiware, Tadafumi; Koizumi, Ken; and Yamazaki, Tetsuya, 3,836,348.

Yanagioka, Hiroshi: *See—*
Noguchi, Masaaki; Yanagioka, Hiroshi; Kanai, Toshio; Nishiguchi, Kazuo; Hashimoto, Hideo; Abe, Katuhiro; Masuko, Tomio; Mahino, Zenichi; and Kogawa, Yosio, 3,836,630.

Yancey, Leonard M.: *See—*
Pomper, William J.; Wilhelm, Charles G.; and Yancey, Leonard M., 3,836,714.

Yano, Nubumitsu; Fukushima, Masao; Fukinbara, Itaru; Kishi, Masanori; and Kimura, Kazuyoshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Synthetic nacreous pigments and method for production thereof. 3,836,531, Cl. 260-248.00a.

Yarborough, Joe Michael: *See—*
Ammann, Eugene O.; and Yarborough, Joe Michael, 3,836,866.

Yarborough, William: *See—*
Frey, Walter; and Yarborough, William, 3,836,601.

Yasuda, Naohiko; Ariyoshi, Yasuo; and Sato, Naotake, to Ajinomoto Co., Inc. Aspartic anhydride having a masked amino group. 3,836,545, Cl. 260-346.80r.

Yasui, Koichi; Yamamoto, Kazuo; Itami, Kazuo; Fujisawa, Kiyoshi; and Sasaki, Toshio, to Asahi Kasei Kogyo Kabushiki Kaisha. Apparatus for continuous xanthation and solution of alkali cellulose. 3,836,336, Cl. 23-260.000.

Yasukabe, Siro: *See—*
Hokao, Zenjiro; Shibata, Teijiro; and Yasukabe, Siro, 3,835,937.

Yata, Kotaro; and Matsuda, Motonobo, to Minolta Camera Kabushiki Kaisha. Indicator circuit. 3,836,262, Cl. 356-226.000.

Yawata, Kazufumi: *See—*
Kobayakawa, Masaki; Yawata, Kazufumi; and Yamashita, Shigeru, 3,836,806.

Yeager, Marvin Leo, to AMP Incorporated. Electrical contact receptacle with helper spring. 3,836,947, Cl. 339-259.00r.

Yerkins, Stephen J., to Goss Gas, Inc. Torch tip and method of fabricating the same. 3,836,081, Cl. 239-424.500.

Ylvisaker, Carl J. Bicycle sail. 3,836,176, Cl. 280-213.000.

Yoda, Renpei, to National Research Institute for Metals, The Director of. Permanent magnetic Fe-Mn-Cr alloy containing nitrogen. 3,836,406, Cl. 148-31.570.

Yokomizo, Yuji: *See—*
Ichinose, Noboru; and Yokomizo, Yuji, 3,836,483.

Yonce, Everett R. Electric circuit tester connector for highway vehicles. 3,836,843, Cl. 324-51.000.

Yoshida, Toyoaki: *See—*
Matsuki, Masakatsu; and Yoshida, Toyoaki, 3,836,283.

Yoshioka, Hirosuke: *See—*
Higo, Akio; Itaya, Nobushige; Hirai, Hajime; and Yoshioka, Hirosuke, 3,836,568.

Yoshiyagawa, Mitsugi: *See—*
Ono, Seiichi; Koizumi, Ken; and Yoshiyagawa, Mitsugi, 3,836,347.

Yoshizawa, Masao; Mikami, Takeo; Kobayashi, Nobuo; and Iida, Akira, to Dainippon Ink & Chemicals, Inc. Flame resistant finish of combustible materials prepared from phosphorous compounds, aldehydes and ketones. 3,836,507, Cl. 260-64.000.

Young, Christopher John: *See—*
Desty, Denis Henry; and Young, Christopher John, 3,836,318.

Young, Dean Arthur, to Union Oil Company of California. Method of treating alumina containing oxides. 3,836,561, Cl. 252-450.000.

Young, Edward John: *See—*
Baxendale, Albert Edward; and Young, Edward John, 3,835,825.

Young Engineering Inc.: *See—*
Young, William O., Jr.; Surka, Ebun A.; and Quattlebaum, Walter J., 3,835,746.

Young, Walter L.: *See—*
Douglas, Clarence J.; Young, Walter L.; and Phillips, Jack H., 3,835,909.

Young, William O., Jr.; Surka, Ebun A.; and Quattlebaum, Walter J., to Young Engineering Inc. Die assembly and rule mounting means therefor. 3,835,746, Cl. 83-346.000.

Young, William Robert: *See—*
Green, Dennis Clinton; and Young, William Robert, 3,836,478.

Yu, Se Puan; and Tantraporn, Wirojana, to General Electric Company. Avalanche diode oscillator. 3,836,872, Cl. 331-107.00r.

Zabotin, Alexandr Alexandrovich: *See—*
Galperin, Alexandr Lvovich; Serebryannikov, Albert Semenovich; Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; Lukoshkov, Vladimir Iosifovich; Lileev, Valeryan Petrovich; Loschilin, Evgeny Dmitrievich; Rutkevich, Zinovy Yakovlevich; Sakharov, oris Alexandrovich; and German, Zinovy Antolievich, 3,835,893.

Zackey, Victor F.: *See—*
Parker, Earl R.; and Zackey, Victor F., 3,836,407.

Zaehner, Hans: *See—*
Keller, Walter; and Zaehner, Hans, 3,836,642.

Zajac, Lawrence J., to Rockwell International Corporation. Porous tube injector. 3,835,886, Cl. 137-604.000.

Zaleski, John F., to Singer Company, The, mesne. Modulating system. 3,836,855, Cl. 325-113.000.

Zaleski, John F., to Singer Company, The. Passive microwave receiver-transmitter. 3,836,962, Cl. 343-6.80r.

Zamboni, Frank J., to Zamboni, Frank J., & Co. Water removal machine for artificial turf. 3,835,500, Cl. 15-319.000.

Zamboni, Frank J., & Co.: *See—*
Zamboni, Frank J., 3,835,500.

Zappia, Anthony T. Tester head. 3,835,698, Cl. 73-94.000.

Zappia, Anthony T. Modular conveyor stand. 3,835,982, Cl. 198-204.000.

Zeile, Karl: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Zeile, Karl; Engelhardt, Albrecht; and Traunecker, Werner, 3,836,666.
Weber, Karl Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,836,652.
Weber, Karl Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, deceased, 3,836,653.

Zelenko, Harry: *See—*
Kleinman, Leonard; and Zelenko, Harry, 3,836,761.

Zell, Felician A., to Vapor Corporation. Variable length valve. 3,836,115, Cl. 251-150.000.

Zenith Carburetter Company Limited, The: *See*—
Ross, Gray Ernest Donald, 3,835,831.

Zias, Arthur R.: *See*—
Solomon, James E.; and Zias, Arthur R., 3,836,796.

Zimmerman, Vincent H.: *See*—
De Garcia, Horacio J., Jr.; and Zimmerman, Vincent H., 3,835,643.

Zimmermann, Detlef; and Lougheed, James Hugh, to Bell Canada-Northern Electric Research Limited. Encapsulated electrically resonant circuit and interrogating apparatus and method for finding same in various locations. 3,836,842, Cl. 324-34.00r.

Zinser-Textilmaschinen GmbH: *See*—
Klein, Konrad, 3,835,633.

Zoleta, Jose C. Method and system for reducing pollutants from engine exhaust. 3,835,645, Cl. 60-274.000.

Zuantor Corporation: *See*—
Seitz, Paul N.; Cox, Gerald C.; and Kahle, Rolf D., 3,836,926.

Zugel, Martin J., to Cyclo Index Corporation. Intermittent motion device. 3,835,723, Cl. 74-436.000.

Zysk, Edward D.; Robertson, Allen R.; Cisz, Michael; and Sheridan, Robert W., to Engelhard Minerals & Chemicals Corporation. Molybdenum-ruthenium thermocouple for temperature measurements under nuclear reaction conditions. 3,836,402, Cl. 136-202.000.

09/17/74; and Chopieska, Frank S. Marker line means for spreader. 3,836,052, Cl. 222-177.000.

LIST OF REISSUE PATENTEES

PATENTS WERE ISSUED ON THE 17TH DAY OF SEPTEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Allied Chemical Corp.: *See*—
Stephenson, Robert L. Re. 28,164.

Anderson, Robert H., to Tektronix, Inc. Optical apparatus including a pair of mosaics of optical imaging elements. Re. 28,162, 9–17–74, Cl. 95—18.

Bolton, Hugh R., T. G. Fellows, E. R. Laithwaite, J. F. Eastham, and E. F. Needham, to Tracked Hovercraft Ltd. Linear induction motor. Re. 28,161, 9–17–74, Cl. 310—13.

Bonvicini, Alberto, and G. Cantatore, to Montecatini Edison S.p.A. Blends of polyolefins and polyamides. Re. 28,167, 9–17–74, Cl. 260—857.

Cantatore, Giuseppe: *See*—
Bonvicini, Alberto, and Cantatore. Re. 28,167.

Eagland, Harold W., deceased by P. Eagland, executor, to Palletower Ltd. Frames for stacking pallets. Re. 28,163, 9–17–74, Cl. 108—53.

Eagland, Phyllis: *See*—
Eagland, Harold W., and P. Re. 28,163.

Eastham, John F.: *See*—
Bolton, Hugh R., Fellows, Laithwaite, Eastham, and Needham. Re. 28,161.

Fellows, Thomas G.: *See*—
Bolton, Hugh R., Fellows, Laithwaite, Eastham, and Needham. Re. 28,161.

Laithwaite, Eric: *See*—
Bolton, Hugh R., Fellows, Laithwaite, Eastham, and Needham. Re. 28,161.

Lingl, John. Apparatus for producing bricks. Re. 28,160, 9–17–74, Cl. 425—316.

Litz, Jack. Nail placing implement. Re. 28,159, 9–17–74, Cl. 145—46.

McCormick, James B., to Miles Laboratories, Inc. Biological specimen processing and embedding apparatus. Re. 28,165, 9–17–74, Cl. 425—117.

Meckler, Gershon, to Westinghouse Electric Corp. Comfort conditioning system. Re. 28,166, 9–17–74, Cl. 165—27.

Miles Laboratories, Inc.: *See*—
McCormick, James B. Re. 28,165.

Montecatini Edison S.p.A.: *See*—
Bonvicini, Alberto, and Cantatore. Re. 28,167.

Needham, Ernest F.: *See*—
Bolton, Hugh R., Fellows, Laithwaite, Eastham, and Needham. Re. 28,161.

Owens-Illinois, Inc.: *See*—
Uhlig, Albert R. Re. 28,158.

Palletower Ltd.: *See*—
Eagland, Harold W., and P. Re. 28,163.

Stephenson, Robert L., to Allied Chemical Corp. Method and apparatus for filling vehicle gas bags. Re. 28,164, 9–17–74, Cl. 141—4.

Tektronix, Inc.: *See*—
Anderson, Robert H. Re. 28,162.

Tracked Hovercraft Ltd.: *See*—
Bolton, Hugh R., Fellows, Laithwaite, Eastham, and Needham. Re. 28,161.

Uhlig, Albert R., to Owens-Illinois, Inc. Displacement molding plastic articles. Re. 28,158, 9–17–74, Cl. 425—245.

Westinghouse Electric Corp.: *See*—
Meckler, Gershon. Re. 28,166.

LIST OF PLANT PATENTEES

Anderson, Frederic W., to Reedley Nursery, Inc. Plum tree. 3,617, 9–17–74, Cl. 38.

Anderson, Frederic W., to Reedley Nursery, Inc. Plum tree. 3,618, 9–17–74, Cl. 38.

Anderson, Frederic W., to Reedley Nursery, Inc. Nectarine tree. 3,619, 9–17–74, Cl. 41.

Anderson, Frederic W., to L. E. Cooke, Co. Dwarf peach tree. 3,620, 9–17–74, Cl. 43.

Cooke, L. E., Co.: *See*—
Anderson, Frederic W. 3,620.

Reedley Nursery, Inc.: *See*—
Anderson, Frederic W. 3,617.
Anderson, Frederic W. 3,618.
Anderson, Frederic W. 3,619.

LIST OF DESIGN PATENTEES

Amerock Corp.: *See*—
Tegner, Raymond U. H. 232,789.

Asai, Hikaru: *See*—
Takashima, Teruo, and Asai. 232,862.

Barich, Frank M.: *See*—
Barton, John T., and Barich. 232,848.

Barton, John T., and F. M. Barich. Horse feeder. 232,848, 9–17–74, Cl. D30—13.

Bennett, Leonard M. Floatable tray. 232,793, 9–17–74. Cl. D6—146.

Blankenship, Arthur C., to Uniroyal, Inc. Pneumatic tire tread and buttress. 232,820, 9–17–74. Cl. D12—149.

Bloyd, Betty L., 33⅓ to Harry Carr, and Cletus Caroland. Dog bed. 232,850, 9–17–74, Cl. D30—41.

Bluestein, Bernard B.: *See*—
Steinkamp, Norman A., and Bluestein. 232,802.

Boyd, J. Patrick, to Thuron Industries, Inc. Insect trap. 232,829, 9–17–74. Cl. D22—19.

Bruest Industries, Inc.: *See*—
Vidmar, George G., Jr. 232,831.

Bunk Trunk Distributors: *See*—
Mendlin, Michael A. 232,788.

Caldwell, John W. Side frame for a chair or similar article. 232,795, 9–17–74, Cl. D6—192.

Carlson, John A., and T. M. Tigard, to Conchemco, Inc. Caliper brake assembly. 232,823, 9–17–74, Cl. D12—179.

Carr, Harry: *See*—
Bloyd, Betty L., Carr, and Caroland. 232,850.

Christen Inc.: *See*—
Christen, Louis J., Jr. 232,832.

Christen, Louis J., Jr., to Christen Inc. Humidity controller for terrariums. 232,832, 9–17–74, Cl. D23—146.

Clark Equipment Co.: *See*—
Myers, James E. 232,813.

Coleman, Kenneth L.: *See*—
Ogle, Paul E., and Coleman. 232,812.

Colquitt, Coy W., Jr., and H. A. Klumb. Rain gauge with mounting spike. 232,859, 9–17–74, Cl. D52—6.

Columbia Broadcasting System, Inc.: *See*—
Vennola, Jorma. 232,853.
Vennola, Jorma. 232,854.
Vennola, Jorma. 232,855.

Conchemco, Inc.: *See*—
Carlson, John A., and Tigard. 232,823.

Con-Stan Industries, Inc.: *See*—
Nobbs, Mulford J. 232,785.

Culbertson, Richard, and R. E. Lee, to General Electric Co. Portable cassette tape recorder. 232,843, 9–17–74, Cl. D26—14.

Curtis, Norman S.: *See*—
Moos, Albert H., and Curtis. 232,830.

Doolittle, John J. Combined beverage can holder and lid. 232,797, 9–17–74, Cl. D7—70.

Edgeington, James N., R. G. Odell, and E. G. Lowrance, III, to IMS Corp. Carton. 232,811, 9–17–74, Cl. D9—224.

Eke, Alan B.: *See*—
Knoss, Robert A., and Eke. 232,822.

Erlich, Hilda: *See*—
Lary, Richard. 232,856.

Family Products, Inc.: *See*—
Roche, David E. 232,798.

Federal Investment Corp.: *See*—
O'Hare, Harry M. 232,810.

Feit, Aron. Antenna. 232,844, 9–17–74, Cl. D26—14.

Fry, James C., to Rubbermaid Inc. Message board and rack. 232,792, 9–17–74, Cl. D6—130.

Fry, James C., to Rubbermaid Inc. Car wastebasket support. 232,821, 9–17–74, Cl. D12—155.

Fry, James C., to Rubbermaid Inc. Combined car wastebasket and accessory holder. 232,870, 9–17–74, Cl. D87—1.

Fusco, Leonard J., and R. J. Perazzini. Salt block holder. 232,846, 9–17–74, Cl. D30—13.

Game Time, Inc.: *See*—
Wormser, Robert S. 232,852.

General Electric Co.: *See*—
Culbertson, Richard, and Lee. 232,843.
Wilkes, Kenneth R. 232,845.
George, Elton G., and W. T. McCollough. Article receptacle for vehicles. 232,871, 9–17–74, Cl. D87—1.
Gerber, William C., to Rubbermaid Inc. Front car mat. 232,824, 9–17–74, Cl. D12—203.
Gerber, William C., to Rubbermaid Inc. Twin front car mat. 232,825, 9–17–74, Cl. D12—203.
Gerber, William C., to Rubbermaid Inc. Twin rear car mat. 232,826, 9–17–74, Cl. D12—203.
Glibert, Evalin S. Table. 232,794, 9–17–74, Cl. D6—177.
Glasstite, Inc.: *See*—
Knoss, Robert A., and Eke. 232,822.
Goodyear Tire & Rubber Co., The: *See*—
Hinkel, Walter W., and Hammond. 232,819.
Hamada, Masanori, to Matsushita Electric Industrial Co., Ltd. Radio receiver. 232,864, 9–17–74, Cl. D56—4.
Hammond, Philip S.: *See*—
Hinkel, Walter W., and Hammond. 232,819.
Hinkel, Walter W., and P. S. Hammond, to The Goodyear Tire & Rubber Co. Tire. 232,819, 9–17–74, Cl. D12—142.
Husby, Donald E., to Westinghouse Electric Corp. Exterior lighting fixture. 232,858, 9–17–74, D48—31.
IMS Corp.: *See*—
Edgeington, James N., Odell, and Lowrance. 232,811.
Imano, Keiji: *See*—
Suganoya, Yoshio, and Imano. 232,800.
Jarvis, Brian C., to Moviecol Enterprises Ltd. Switch unit for use with a piano keyboard. 232,865, 9–17–74, Cl. D56—9.
Kabushiki Kaisha Koparu: *See*—
Watanabe, Riki. 232,814.
Kalnins, Zledonis. Towel and toothbrush rack. 232,790, 9–17–74, Cl. D6—91.
Kitai, Isao, and M. Yamagami, to Sharp Kabushiki Kaisha (Sharp Corp). Electronic calculating machine. 232,833, 9–17–74, Cl. D26—5.
Kitai, Isao, and S. Onishi, to Sharp Kabushiki Kaisha Sharp Corp.). Electronic calculating machine. 232,835. 9–17–74, Cl. D26—5.
Kitai, Isoa, to Sharp Kabushiki Kaisha (Sharp Corp.). Electronic calculating machine. 232,836, 9–17–74, Cl. D26—5.
Kitai, Isao, to Sharp Kabushiki Kaisha. Electronic clinical thermometer. 232,860, 9–17–74, Cl. D52—7.
Kitamori, Masakazu: *See*—
Miya, Masami, and Kitamori. 232,816.
Kleiman, Charles, to Lake Chemical Co. Spatula. 232,803, 9–17–74, Cl. D8—45.
Klumb, Harvey A.: *See*—
Colquitt, Coy W., Jr., and Klumb. 232,859.
Knoss, Robert A., and A. B. Eke, to Glasstite, Inc. Top for pickup truck. 232,822, 9–17–74, Cl. D12—156.
Knudson, Paul. Breadbox with breadboard. 232,799, 9–17–74, Cl. D7—82.
Koblick, Jeffrey M. Broiler sheet. 232,801, 9–17–74, Cl. D7—129.
Koblick, Jeffrey M. Hair trimmer. 232,874, 9–17–74, Cl. D95—3.
Kumiai Chemical Industry Co., Ltd.: *See*—
Okubo, Tadashi. 232,847.
Kwako, Stanley J. Gun sight. 232,828, 9–17–74, Cl. D22—8.
Lake Chemical Co.: *See*—
Kleiman, Charles. 232,803.
Lang, James W. Combined hand carried lighting unit and magnetic base therefor. 232,857, 9–17–74, Cl. D48—24.
Lary, Richard, to Hilda Erlich. Lampshade. 232,856, 9–17–74, Cl. D48—1.
Lecube, Kathy. Handbag. 232,873, 9–17–74, Cl. D87—3.
Lee, Richard E.: *See*—
Culbertson, Richard, and Lee. 232,843.
Lowrance, Edgar G., III.: *See*—
Edgeington, James N., Odell, and Lowrance. 232,811.
Mailbox, Inc., The: *See*—
Yoshimura, Masao. 232,869.
Mann, Samuel J., to Tile Speed Communication, Inc. Printer. 232,866, 9–17–74, Cl. D64—11.
Marer, Clarence D., to Swank, Inc. Button topper, or similar article. 232,786, 9–17–74, Cl. D2—451.
Mariner, Charlie D.: *See*—
Shlesinger, Bernard E., Jr., and Mariner. 232,837–842.
Matsushita Electric Industrial Co., Ltd.: *See*—
Hamada, Masanori. 232,864.
McCollough, William T.: *See*—
George, Elton G., and McCollough. 232,871.
Mendlin, Michael A., to Bunk Trunk Distributors. Combined bed and storage unit. 232,788, 9–17–74, Cl. D6—80.
Miya, Masami, and M. Kitamori, to Nepon Kabushiki Kaisha. Boat. 232,816, 9–17–74, Cl. D12—62.
Moos, Albert H., and N. S. Curtis, to Ransburg Corp. Atomizing head for an electrostatic sprayer. 232,830, 9–17–74, Cl. D23—34.
Moviecol Enterprises Ltd.: *See*—
Jarvis, Brian C. 232,865.
Mueller, Thomas R. Glass marble dog. 232,851, 9–17–74, Cl. D34—2.
Myers, James E., to Clark Equipment Co. Wire basket. 232,813, 9–17–74, Cl. D9—247.
Nepon Kabushiki Kaisha: *See*—
Miya, Masami, and Kitamori. 232,816.
Niwell, Arnold W. Combined chess game play timer and scorer. 232,815, 9–17–74, Cl. D10—40.
Nobbs, Mulford J., to Con-Stan Industries, Inc. Brassiere. 232,785, 9–17–74, Cl. D2—24.
O-T-D Corp.: *See*—
Ogle, Paul E., and Coleman. 232,812.
Odell, Richard G.: *See*—
Edgeington, James N., Odell, and Lowrance. 232,811.
Ogle, Paul E., and K. L. Coleman, to O-T-D Corp. Shipping container. 232,812, 9–17–74, Cl. D9—246.
O'Hare, Harry M., to Federal Investment Corp. Dispensing container for liquids. 232,810, 9–17–74, Cl. D9—71.
Okubo, Tadashi, to Kumiai Chemical Industry Co., Ltd. Feeding container for animals. 232,847, 9–17–74, Cl. D30—13.
Onishi, Shigetomo: *See*—
Kitai, Isao, and Onishi. 232,835.
Pardo, John, to The Procter & Gamble Co. Bottle. 232,809, 9–17–74, Cl. D9—45.
Perazzini, Robert J.: *See*—
Fusco, Leonard J., and Perazzini. 232,846.
Power, John J., to Swingline Inc. Stapling machine. 232,804, 9–17–74, Cl. D8—50.
Procter & Gamble Co., The: *See*—
Pardo, John. 232,809.
Ransburg Corp.: *See*—
Moos, Albert H., and Curtis. 232,830.
Roche, David E., to Family Products, Inc. Insulated chest. 232,798, 9–17–74, Cl. D7—77.
Rockvam, Thomas C. Dock supporting bracket. 232,808, 9–17–74, Cl. D8—233.
Roth, Edward. Three wheeled vehicle body. 232,818, 9–17–74, Cl. D12—85.
Rubbermaid Inc.: *See*—
Fry, James C. 232,792.
Fry, James C. 232,821.
Fry, James C. 232,870.
Gerber, William C. 232,824.
Gerber, William C. 232,825.
Gerber, William C. 232,826.
Schlage, Ernest L., to Schlage Lock Co. Key blank. 232,806, 9–17–74, Cl. D8—136.
Schlage Lock Co.: *See*—
Schlage, Ernest L. 232,806.
Schoifield, Richard P., to Wheeldex Mfg. Co., Inc. Card file. 232,868, 9–17–74, Cl. D74—2.
Schulz, Donald A. Christmas tree stand. 232,791, 9–17–74, Cl. D6—105.
Scott, Delmar D.: *See*—
Siroonian, John. 232,827.
Se Kit, Yuen. Combined telephone stand and index. 232,867, 9–17–74, Cl. D74—1.
Sharp Kabushiki Kaisha: *See*—
Kitai, Isao, 232,860.
Suganoya, Yoshio, and Imano. 232,800.
Takashima, Teruo, and Asai. 232,862.
Yamagami, Masafumi. 232,834.
Sharp Kabushiki Kaisha (Sharp Corp).: *See*—
Kitai, Isao. 232,836.
Kitai, Isao, and Onishi. 232,835.
Kitai, Isao, and Yamagami. 232,833.
Shlesinger, Bernard E., Jr., and C. D. Mariner. Reed for a reed switch assembly. 232,837, 9–17–74, Cl. D26—13.
Shlesinger, Bernard E., Jr., and C. D. Mariner. Reed for a reed switch assembly. 232,838, 9–17–74, Cl. D26—13.
Shlesinger, Bernard E., Jr., and C. D. Mariner. Reed for a reed switch assembly. 232,839, 9–17–74. Cl. D26—13.
Shlesinger, Bernard E., Jr., and C. D. Mariner. Reed for a reed switch assembly. 232,840, 9–17–74, Cl. D26—13.
Shlesinger, Bernard E., Jr., and C. D. Mariner. Reed for a reed switch assembly. 232,841, 9–17–74, Cl. D26—13.
Shlesinger, Bernard E., Jr., and C. D. Mariner. Reed for a reed switch assembly. 232,842, 9–17–74, Cl. D26—13.
Siroonian, John, and D. D. Scott. Wheel center. 232,827, 9–17–74, Cl. D12—205.
Smith, Clement J. Plate tray. 232,796, 9–17–74, Cl. D7—37.
Steinkamp, Norman A., and B. B. Bluestein, to Sunbeam Corp. Housing for a steam generating appliance. 232,802, 9–17–74, Cl. D7—164.
Suganoya, Yoshio, and K. Imano, to Sharp Kabushiki Kaisha. Electronic cooking range. 232,800, 9–17–74, Cl. D7—128.
Sunbeam Corp.: *See*—
Steinkamp, Norman A., and Bluestein. 232,802.
Swank, Inc.: *See*—
Marer, Clarence D. 232,786.
Swingline Inc.: *See*—
Power, John J. 232,804.
Takashima, Teruo, and H. Asai, to Sharp Kabushiki Kaisha. Television receiver. 232,862, 9–17–74, Cl. D56—14.
Takei, Taka Y. Portable radio. 232,861, 9–17–74, Cl. D56—4.
Tegner, Raymond U. H., to Amerock Corp. Supporting bracket. 232,789, 9–17–74, Cl. D6—86.
Tegner, Raymond U. H. Chain guard. 232,805, 9–17–74, Cl. D8—131.
Thuron Industries, Inc.: *See*—
Boyd, J. Patrick. 232,829.
Tigard, Theodore M.: *See*—
Carlson, John A., and Tigard. 232,823.
Tile Speed Communication, Inc.: *See*—
Mann, Samuel J. 232,866.
Toner, Joseph P. Spacer for concrete reinforcing rods. 232,807. 9–17–74, Cl. D8—228.
Tong, Vong H. Radio receiver. 232,863, 9–17–74. Cl. D56—4.
Uniroyal, Inc.: *See*—
Blankenship, Arthur C. 232,820.
Vennola, Jorma, to Columbia Broadcasting System, Inc. Crib toy mobile. 232,853, 9–17–74. Cl. D34—15.
Vennola, Jorma, to Columbia Broadcasting System, Inc. Crib toy mobile. 232,854, 9–17–74, Cl. D34—15.
Vennola, Jorma, to Columbia Broadcasting System, Inc. Toy scoop. 232,855, 9–17–74, Cl. D34—15.
Ventimiglia, Anthony J. Box for bingo accessories. 232,872, 9–17–74, Cl. D87—1.

Vidmar, George G., Jr., to Bruest Industries, Inc. Catalytic heater head attachment. 232,831, 9–17–74, Cl. D23—137.
Watanabe, Riki, to Kabushiki Kaisha Koparu. Digital alarm Clock. 232,814, 9–17–74, Cl. D10—15.
Watson, S. V., Co., The: *See*—
Watson, Samuel V. 232,817.
Watson, Samuel V., to The S. V. Watson Co. Snowmobile proctective cover. 232,817, 9–17–74, Cl. D12—7.
Westinghouse Electric Corp.: *See*—
Husby, Donald E. 232,858.
Wheeldex Mfg. Co., Inc.: *See*—
Scholfield, Richard P. 232,868.
White, Marvin. Ketchup transfer rack. 232,787, 9–17–74, Cl. D6—20.
Wilkes, Kenneth R., to General Electric Co. Loudspeaker. 232,845, 9–17–74, Cl. D26—14.
Wilson, Mary E. Pet chair. 232,849, 9–17–74, Cl. D30—41.
Wormser, Robert S., to Game Time, Inc. Playground climber representing a caterpillar. 232,852, 9–17–74, Cl. D34—5.
Yamagami, Masafumi, to Sharp Kabushiki Kaisha. Electronic calculating machine. 232,834, 9–17–74, Cl. D26—5.
Yamagami, Masafumi: *See*—
Kitai, Isao, and Yamagami. 232,833.
Yoshimura, Masao, to The Mailbox, Inc. Signalized back pack. 232,869, 9–17–74, Cl. D87—1.

CLASSIFICATION OF PATENTS

ISSUED SEPTEMBER 17, 1974

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
79 3,835,470
84 3,835,471
161A 3,835,472
237 3,835,473
251 3,835,474

CLASS 3
1 3,835,475
3,835,476

CLASS 4
9 3,835,477
11 3,835,478
79 3,835,479
116 3,835,480
172.21 3,835,481
177 3,835,482
185S 3,835,483
199 3,835,484

CLASS 5
247 3,835,485
317R 3,835,486

CLASS 6
5 3,835,487

CLASS 7
1R 3,835,488
3,835,489

CLASS 8
10.1 3,836,326
149.1 3,835,490
173 3,836,327

CLASS 9
1T 3,835,491
6 3,835,492
307 3,835,493
310D 3,835,494

CLASS 10
10R 3,835,495

CLASS 12
142R 3,835,496

CLASS 13
6 3,836,689

CLASS 14
71 3,835,497

CLASS 15
21E 3,835,498
250.04 3,835,499
319 3,835,500

CLASS 16
51 3,835,501

CLASS 17
21 3,835,502
35 3,835,503
66 3,835,504

CLASS 21
56 3,836,328

CLASS 23
230B 3,836,332
230R 3,836,329
3,836,330
3,836,331
259 3,836,333
3,836,334
3,836,335
260 3,836,336
270R 3,836,337
277C 3,836,338
277R 3,836,339

CLASS 24
16R 3,835,505
68D 3,835,506
134R 3,835,507
201R 3,836,049
204 3,835,508

CLASS 27
19 3,835,509

CLASS 28
1.4 3,835,510
3,835,511
72FT 3,835,512
72.14 3,835,513

CLASS 29
2 3,835,514
27C 3,835,515
47 3,835,516
90 3,835,517
150 3,835,518
177 3,835,519
182.5 3,836,340
191.6 3,836,341
202D 3,835,520
203B 3,835,521
239 3,835,522
252 3,835,523
401 3,835,524
412 3,835,525
470.9 3,835,526
560 3,835,527
3,835,528
570 3,835,529
574 3,835,530
625 3,835,531

CLASS 30
40.2 3,835,532
146 3,835,533
169 3,835,534
249 3,835,535
294 3,835,536
346.53 3,835,537

CLASS 32
14A 3,835,539
14E 3,835,538
3,835,540

CLASS 33
21C 3,835,541
109 3,835,542
141E 3,835,543
147J 3,835,544
174F 3,835,545
338 3,835,546
347 3,835,547
367 3,835,548
379 3,835,549

CLASS 34
5 3,835,550
100 3,835,551
151 3,835,552

CLASS 35
9C 3,835,553
10.2 3,836,690
45 3,835,554

CLASS 36
9R 3,835,555
33 3,835,556
34A 3,835,557
44 3,835,558

CLASS 38
21 3,835,559

CLASS 40
104.01 3,835,560
106.32 3,835,561
155 3,835,562
209 3,835,563
306 3,835,564

CLASS 42
1S 3,835,565
16 3,835,566

CLASS 43
6.5 3,835,567
17 3,835,568
18GF 3,835,569
19.2 3,835,570
21 3,835,571
42.06 3,835,572
43.12 3,835,573
53.5 3,835,574
56 3,835,575
86 3,835,576
112 3,835,577
132 3,835,578

CLASS 44
25 3,836,343
56 3,836,342

CLASS 46
11 3,835,580
92 3,835,581
126 3,835,582
201 3,835,583

CLASS 47
37 3,835,584

CLASS 48
211 3,836,344

CLASS 49
398 3,835,585
463 3,835,586

CLASS 51
9 3,835,587
58 3,835,588
103WH 3,835,589
105LG 3,835,590
106R 3,835,591
170TL 3,835,592
216ND 3,835,593
220 3,835,594
268 3,835,595
284 3,835,596
289 3,835,597
297 3,836,345
396 3,835,598

CLASS 52
2 3,835,599
67 3,835,600
79 3,835,601
82 3,835,602
83 3,835,603
105 3,835,604
169 3,835,605
220 3,835,606
223 3,835,607
426 3,835,608
478 3,835,609
621 3,835,611
638 3,835,612
656 3,835,613
666 3,835,614
755 3,835,610
758D 3,835,615
758H 3,835,616

CLASS 53
21 3,835,617
112A 3,835,618
138R 3,835,619
157 3,835,620

CLASS 54
44 3,835,621

CLASS 55
48 3,835,622
148 3,835,623
220 3,835,624
259 3,835,625
319 3,835,626
387 3,835,627

CLASS 56
14.4 3,835,628
3,835,629
295 3,835,630

CLASS 57
34HS 3,835,631
3,835,632
52 3,835,633
130 3,835,634
140BY 3,835,637
140R 3,835,635
144 3,835,638
156 3,835,636
3,835,639

CLASS 58
.14 3,835,640

CLASS 60
39.16R 3,835,642
230 3,835,643
267 3,835,644
274 3,835,645
290 3,835,646
486 3,835,647
524 3,835,648
560 3,835,649
690 3,835,650
716 3,835,641

CLASS 61
4 3,835,651
35 3,835,652
46.5 3,835,653
3,835,654
72.3 3,835,655
3,835,656

CLASS 62
35 3,835,657
58 3,835,658
202 3,835,659
277 3,835,660
340 3,835,661
467 3,835,662
505 3,835,663

CLASS 63
15.6 3,835,664
32 3,835,665

CLASS 64
6 3,835,666
17R 3,835,667

CLASS 65
1 3,836,346
2 3,836,347
30 3,836,348
134 3,836,349

CLASS 66
19 3,835,668
50R 3,835,669
69 3,835,670

CLASS 68
5D 3,835,671
206 3,835,672

CLASS 70
14 3,835,673
34 3,835,674
38A 3,835,675
52 3,835,676
216 3,835,677
241 3,835,678
271 3,835,679
278 3,835,680

CLASS 71
92 3,836,350
3,836,351
94 3,836,352

CLASS 72
10 3,835,681
14 3,835,682
36 3,835,683
50 3,835,684
263 3,835,685
354 3,835,686
369 3,835,687
370 3,835,688
385 3,835,689
415 3,835,690
427 3,835,691
442 3,835,692
457 3,835,693
469 3,835,694

CLASS 73
3 3,835,695
7 3,835,697
70 3,835,696
94 3,835,698
95 3,835,699
113 3,835,700
117.4 3,835,701
133R 3,835,702
147 3,835,703
194A 3,835,704
194F 3,835,705
254 3,835,706
291 3,835,707
292 3,835,708
311 3,835,709
421.5R 3,835,710
444 3,835,711
462 3,835,712

CLASS 74
10.33 3,835,713
18.2 3,835,714
22R 3,835,715
40 3,835,716
70 3,835,717
86 3,835,718
208 3,835,719
231C 3,835,720
245R 3,835,721
405 3,835,722
436 3,835,723
489 3,835,724
492 3,835,725
501P 3,835,726
520 3,835,727
603 3,835,728
611 3,835,729
650 3,835,730
682 3,835,731
688 3,835,732
866 3,835,733

CLASS 75
.5BA 3,836,355
3 3,836,353
3,836,354
33 3,836,356
68A 3,836,357
122 3,836,358
129 3,836,359
135 3,836,360

CLASS 76
101A 3,835,734

CLASS 81
177UJ 3,835,735
180R 3,835,736
3,835,737

CLASS 82
4C 3,835,738
20 3,835,739
47 3,835,740

CLASS 83
71 3,835,741
77 3,835,742
146 3,835,743
267 3,835,744
285 3,835,745
346 3,835,746
422 3,835,747

CLASS 84
1.01 3,836,692
1.19 3,836,693
388 3,835,748

CLASS 89
1.8 3,835,749

CLASS 91
35 3,835,750
420 3,835,751
492 3,835,752

CLASS 92
85 3,835,753

CLASS 93
1TS 3,835,754
8WA 3,835,755
3,835,756

CLASS 95
18R Re.28,162

CLASS 96
1LY 3,836,361
1.1 3,836,362
1.2 3,836,363
1.4 3,836,364
3 3,836,365
33 3,836,366
36.4 3,836,367
69 3,836,368
91R 3,836,369
127 3,836,370

CLASS 98
2 3,835,757
33 3,835,758
40A 3,835,759

CLASS 99
331 3,835,760
421H 3,835,761
483 3,835,762
495 3,835,763
517 3,835,764
553 3,835,765
618 3,835,766

CLASS 100
53 3,835,767
94 3,835,768
227 3,835,769

CLASS 101
93C 3,835,770
111 3,835,771
116 3,835,772
122 3,835,773
148 3,835,774
151 3,835,775
183 3,835,776
350 3,835,777
415.1 3,835,778
425 3,835,779
454 3,835,780
464 3,835,781

CLASS 102
27R 3,835,782
42C 3,835,783
70.2R 3,835,784

CLASS 104
130 3,835,785
172S 3,835,786

CLASS 105
176 3,835,787
182E 3,835,788
224R 3,835,789
285 3,835,790

CLASS 106
10 3,836,371
38.22 3,836,372
47Q 3,836,375
48 3,836,373
55 3,836,374
213 3,836,376
287 3,836,377
288Q 3,836,379
288R 3,836,378

CLASS 108
51 3,835,791
3,835,792
53 Re.28,163
109 3,835,793
153 3,835,794
157 3,835,795

CLASS 110
119 3,835,796

CLASS 112
79A 3,835,797
150 3,835,798

CLASS 113
1E 3,835,799

CLASS 114
.5R 3,835,800
16R 3,835,801
43.5 3,835,802
73 3,835,803
107 3,835,804
151 3,835,805

CLASS 115
12R 3,835,806
41R 3,835,807

CLASS 116
34R 3,835,808
114AH 3,835,809
137A 3,835,810

CLASS 117
6 3,836,380
17.5 3,836,381
36.2 3,836,382
3,836,383
37LE 3,836,384
47R 3,836,385
72 3,836,386
102A 3,836,387
120 3,836,388
129 3,836,389
138.8A 3,836,390
152 3,836,391
169R 3,836,392
217 3,836,393
3,836,394
238 3,836,395

CLASS 118
637 3,835,811

CLASS 119
1 3,835,812
5 3,835,813

14.04 3,835,814
158 3,835,815

CLASS 122

156 3,835,816
379 3,835,817

CLASS 123

8.33 3,835,818
32EA 3,835,819
3,835,821
32 3,835,820
41.31 3,835,822
42 3,835,823
46R 3,835,824
97B 3,835,825
103E 3,835,826
119A 3,835,827
119R 3,835,828
139E 3,835,829
148E 3,835,830
179G 3,835,831

CLASS 126

215 3,835,832

CLASS 127

30 3,836,396

CLASS 128

1C 3,835,833
2F 3,835,835
2T 3,835,836
2W 3,835,834
2.05F 3,835,839
2.05P 3,835,837
3,835,838
2.05V 3,835,840
5 3,835,841
7 3,835,842
17 3,835,843
33 3,835,844
64 3,835,845
66 3,835,846
75 3,835,847
76C 3,835,848
92EB 3,835,849
130 3,835,850
132D 3,835,851
146.5 3,835,852
212 3,835,853
214.4 3,835,854
218M 3,835,855
263 3,835,856
295 3,835,857
305 3,835,858
3,835,859
310 3,835,860
346 3,835,861
349R 3,835,862
350R 3,835,863
419P 3,835,864
3,835,865
547 3,835,866

CLASS 132

5 3,835,867
3,835,868
9 3,835,869
39 3,835,871
92R 3,835,872
160 3,835,870

CLASS 136

25 3,836,397
83R 3,836,403
86A 3,836,398
89 3,836,399
133 3,836,400
134R 3,836,401
202 3,836,402

CLASS 137

3 3,835,873
15 3,835,874
75 3,835,875
82 3,835,876
246.13 3,835,878
355.18 3,835,879
387 3,835,880
389 3,835,881
445 3,835,882
512.1 3,835,883
550 3,835,884
551 3,835,885
604 3,835,886
625.41 3,835,887
625.61 3,835,888

CLASS 138

93 3,835,889
103 3,835,890
125 3,835,891
178 3,835,892

CLASS 139

12 3,835,893
55 3,835,894
65 3,835,895
207 3,835,877

CLASS 141

3 3,835,896
4 Re.28,164
98 3,835,897
152 3,835,898
214 3,835,899
348 3,835,900

CLASS 144

34R 3,835,901
310B 3,835,902
313 3,835,904

CLASS 145

46 Re.28,159

CLASS 148

11.5R 3,836,404
12.7 3,836,405
31.57 3,836,406
142 3,836,407
175 3,836,408
187 3,836,409

CLASS 150

52J 3,835,905

CLASS 151

21B 3,835,906

CLASS 152

153 3,835,907
243 3,835,908

CLASS 156

3 3,836,410
59 3,836,411
62.2 3,836,412
73 3,836,413
87 3,836,414
296 3,836,415

CLASS 159

16A 3,835,909
23 3,835,910

CLASS 160

168 3,835,911

CLASS 161

2 3,836,416
5 3,836,417
17 3,836,418
18 3,836,419
19 3,836,420
63 3,836,421
154 3,836,422
159 3,836,423
3,836,424
165 3,836,425
170 3,836,426

CLASS 162

31 3,836,427
274 3,836,428

CLASS 163

5 3,835,912

CLASS 164

35 3,835,913
52 3,835,914
252 3,835,915
3,835,916
279 3,835,917

CLASS 165

23 3,835,903
27 Re.28,166
47 3,835,918
3,835,919
81 3,835,920
86 3,835,921
94 3,835,922
179 3,835,923

CLASS 166

.5 3,835,924
73 3,835,925
292 3,835,926
304 3,835,927
308 3,835,928
315 3,835,929

CLASS 169

66 3,835,930
70 3,835,931

CLASS 172

197 3,835,932
518 3,835,933

CLASS 173

12 3,835,934
14 3,835,935
162 3,835,936

CLASS 174

22 3,836,694
23C 3,836,695
41 3,836,696
68.5 3,836,697
83 3,836,698
87 3,836,699
89 3,836,700
92 3,836,702
93 3,836,701
138D 3,836,703
3,836,704
140C 3,836,705

CLASS 175

6 3,835,937
52 3,835,938
65 3,835,939
85 3,835,940
88 3,835,941
96 3,835,942
173 3,835,943
364 3,835,944

CLASS 176

29 3,836,429
33 3,836,430
79 3,836,431

CLASS 177

134 3,835,945
256 3,835,946

CLASS 178

5.2D 3,836,706
5.4AC 3,836,708
5.4R 3,836,707
6.7R 3,836,709
6.8 3,836,710
7.1 3,836,711
3,836,712

CLASS 179

1DD 3,836,716
1GQ 3,836,715
1SA 3,836,717
1SC 3,836,714
1H 3,836,718
15AS 3,836,719
15BS 3,836,721
3,836,722
15FD 3,836,720
18AD 3,836,723
18FG 3,836,725
41A 3,836,726
84VF 3,836,727
84R 3,836,728
90B 3,836,729
99 3,836,730
100.4R 3,836,731
107FD 3,836,732
119A 3,836,733
170.2 3,836,734
175.3R 3,836,735
182R 3,836,724

CLASS 180

5R 3,835,947
3,835,948
41 3,835,949
98 3,835,950
118 3,835,952
119 3,835,951

CLASS 181

33K 3,835,955
35A 3,835,956
116 3,835,954

CLASS 182

19 3,835,957
92 3,835,958

CLASS 187

22 3,835,959

CLASS 188

71.9 3,835,960
3,835,961
73.1 3,835,962
3,835,963
79.5GT 3,835,964
3,835,965
106F 3,835,966
134 3,835,967
196P 3,835,968
197 3,835,969
345 3,835,970

CLASS 192

18A 3,835,971
26 3,835,972
56R 3,835,973
87.15 3,835,974

CLASS 195

11 3,836,432
68 3,836,433

CLASS 197

1R 3,835,975
82 3,835,976

CLASS 198

16R 3,835,977
22R 3,835,978
30 3,835,979
139 3,835,980
204 3,835,981
3,835,982
220BA 3,835,983
3,835,984
271 3,835,985

CLASS 200

5B 3,836,736
48A 3,836,737
61.45R 3,836,738
61.47 3,836,739
144B 3,836,740
148R 3,836,741
153LB 3,836,742

CLASS 201

2 3,836,434
27 3,836,435

CLASS 204

10 3,836,436
17 3,836,437
58 3,836,439
74 3,836,440
78 3,836,441
99 3,836,442
105M 3,836,443
159.24 3,836,444
163R 3,836,445
192 3,836,446
195R 3,836,447
270 3,836,448
277 3,836,449
279 3,836,438
290F 3,836,450
298 3,836,451

CLASS 206

42 3,835,995
45.11 3,835,987
45.31 3,835,988
3,835,989
306 3,835,990
320 3,835,986
343 3,835,991
390 3,835,992
451 3,835,993
499 3,835,994
504 3,836,043
519 3,836,042

CLASS 208

108 3,836,452
111 3,836,454
143 3,836,453
310 3,836,455

CLASS 209

9 3,835,996
73 3,835,997
111.7 3,835,998
251 3,835,999

CLASS 210

16 3,836,456
23 3,836,457
3,836,458
28 3,836,459
44 3,836,460
56 3,836,461
58 3,836,462
104 3,836,000
162 3,836,463
167 3,836,001
232 3,836,002
241 3,836,003
242 3,836,004
266 3,836,005
387 3,836,006
413 3,836,464

CLASS 211

13 3,836,007
49R 3,836,008
90 3,836,009

CLASS 212

49 3,836,010
144 3,836,011
145 3,836,012

CLASS 213

54 3,836,013

CLASS 214

1A 3,836,014
1B 3,836,016
1P 3,836,015
6FS 3,836,017
3,836,018
14 3,836,019
16.4C 3,836,020
41 3,836,021
3,836,022
63 3,836,023
75H 3,836,024
77R 3,836,025
152 3,836,026
331 3,836,027
338 3,836,028
450 3,836,029
515 3,836,030
730 3,836,031
764 3,836,032

CLASS 215

7 3,836,033
9 3,836,034

CLASS 219

10.43 3,836,743
10.49 3,836,744
85 3,836,745
101 3,836,746
130 3,836,747
137 3,836,748
370 3,836,749
3,836,750
411 3,836,751
441 3,836,713

CLASS 220

24.5 3,836,035
32 3,836,036
35 3,836,037
48 3,836,038
54 3,836,039
60R 3,836,040
85R 3,836,041

CLASS 221

55 3,836,044
63 3,836,045
67 3,836,046
93 3,836,047
172 3,836,048

CLASS 222

66 3,836,050
175 3,836,051
177 3,836,052
400.7 3,836,053
414 3,836,054
427 3,836,055
480 3,836,056
529 3,836,057

CLASS 224

42.1F 3,836,058

CLASS 225

64 3,836,059

CLASS 226

115 3,836,060

CLASS 227

155 3,836,061

CLASS 228

1 3,836,062

CLASS 229

1.5B 3,836,063
3.5MF 3,836,064
27 3,836,065
40 3,836,066
44R 3,836,067
54R 3,836,068

CLASS 232

1R 3,836,069

CLASS 233

7 3,836,070

CLASS 235

61.11D 3,836,753
61.11J 3,836,752
61.12N 3,836,754
61.7R 3,836,755
99A 3,836,071
133R 3,836,072
150.1 3,836,756
151.3 3,836,757
151.31 3,836,758

CLASS 236

49 3,836,073
93 3,836,074

CLASS 238

14 3,836,075

CLASS 239

8 3,836,076
60 3,836,077
70 3,836,078
74 3,836,079
96 3,836,080
424.5 3,836,081
526 3,836,082
572 3,836,083
587 3,836,084

CLASS 240

6.4W 3,836,759
10C 3,836,761
10R 3,836,760
25 3,836,767
3,836,954
26 3,836,762
41.6 3,836,763
51.11R 3,836,764
3,836,765
73DA 3,836,766

CLASS 241

19 3,836,085

CLASS 242

35.5R 3,836,086
43 3,836,087
55 3,836,088
58.1 3,836,089
68.5 3,836,090
71.2 3,836,091
84.2A 3,836,092
118.6 3,836,093
192 3,836,094
195 3,836,095
197 3,836,096

CLASS 244

1N 3,836,097
17.27 3,836,098
44 3,836,099
54 3,836,100
137R 3,836,101

CLASS 246

3 3,836,768
167D 3,836,770
448 3,836,771

CLASS 248

74R 3,836,102
130 3,836,103
150 3,836,104
223 3,836,105
229 3,836,106
251 3,836,107
452 3,836,108

CLASS 249

14 3,836,109
79 3,836,110
121 3,836,111
197 3,836,112

CLASS 250

204 3,836,772
211J 3,836,773
231R 3,836,774
305 3,836,775
312 3,836,776
315 3,836,777
327 3,836,778
352 3,836,779
385 3,836,780
432 3,836,781
461 3,836,782
481 3,836,783
483 3,836,784
501 3,836,785
540 3,836,786
572 3,836,787

CLASS 251

5 3,836,113
149.6 3,836,114
150 3,836,115
174 3,836,116
351 3,836,117

CLASS 252

8.5C 3,836,465
12 3,836,466
18 3,836,467
33.6 3,836,468
40.5 3,836,469
51.5A 3,836,470
3,836,471
62.57 3,836,472
79.2 3,836,473
171 3,836,474
187R 3,836,475
301.1R 3,836,476
301.4F 3,836,477
408 3,836,478
431N 3,836,555
433 3,836,479
439 3,836,480
450 3,836,561
462 3,836,481
511 3,836,482
519 3,836,483
550 3,836,484

CLASS 254

104 3,836,118
131 3,836,119
138 3,836,120
170R 3,836,121
172 3,836,122
186R 3,836,123

CLASS 259

1R 3,836,124
3 3,836,125
95 3,836,126
191 3,836,127

CLASS 260

2EP 3,836,485
2.3 3,836,486
2.5AC 3,836,488
2.5AK 3,836,487
18TN 3,836,490
18S 3,836,489
22TN 3,836,491
23TN 3,836,492
29.2TN 3,836,493
29.4UA 3,836,495
29.44A 3,836,494
29.6HN 3,836,537
29.6H 3,836,496
29.7SQ 3,836,497
30.8R 3,836,498
31.2R 3,836,499
32.6N 3,836,500
37SB 3,836,502
3,836,503
37N 3,836,501
42.55 3,836,504
45.8N 3,836,505
47CP 3,836,506
64 3,836,507
75S 3,836,508
77.5BB 3,836,509

78.5R 3,836,510
79.3R 3,836,511
80.73 3,836,512
82.1 3,836,513
86.1E 3,836,514
87.5R 3,836,515
141 3,836,516
152 3,836,517
3,836,518
210E 3,836,519
210.5 3,836,520
239BD 3,836,521
239BF 3,836,524
239.3A 3,836,523
3,836,525
239.55A 3,836,527
239.55R 3,836,526
239.9 3,836,522
240A 3,836,528
240G 3,836,529
240R 3,836,530
248A 3,836,531
250A 3,836,532
256.4F 3,836,533
268BC 3,836,534
268S 3,836,535
286R 3,836,536
302F 3,836,538
307A 3,836,539
309 3,836,540
326.2 3,836,541
330.5 3,836,542
340.3 3,836,543
343.2R 3,836,544
346.8R 3,836,545
369 3,836,546
3,836,547
376 3,836,601
380 3,836,548
397.1 3,836,549
404 3,836,550
404.5 3,836,551
409 3,836,552
419 3,836,553
439R 3,836,554
446 3,836,556
448.2E 3,836,557
448.2N 3,836,558
448.8R 3,836,559
453R 3,836,560
455R 3,836,562
456A 3,836,563
464 3,836,564
465.5R 3,836,565
465.9 3,836,566
468H 3,836,567
470 3,836,568
471C 3,836,569
471R 3,836,570
472 3,836,571
475B 3,836,572
475P 3,836,573
486D 3,836,574
486H 3,836,575
486R 3,836,576
514D 3,836,577
543R 3,836,578
558H 3,836,579
566AC 3,836,580
566AE 3,836,582
585.5 3,836,581
586M 3,836,583
590 3,836,584
604R 3,836,585
606.5F 3,836,586
610B 3,836,587
3,836,588
619A 3,836,589
621G 3,836,590
654R 3,836,591
668A 3,836,592
669R 3,836,594
673.5 3,836,602
677R 3,836,603
683.15B 3,836,593
683.15D 3,836,596
683.65 3,836,597
827 3,836,598
836 3,836,600
3,836,604
849 3,836,605
857L Re.28,167
861 3,836,606
897A 3,836,607
926 3,836,608
927N 3,836,599
971 3,836,609
986 3,836,610

CLASS 261

39A 3,836,128
47 3,836,129
142 3,836,130

CLASS 264

14 3,836,611
30 3,836,612
40 3,836,613
47 3,836,614
50 3,836,615
51 3,836,616
101 3,836,617
131 3,836,618
171 3,836,619
210F 3,836,620
249 3,836,621
267 3,836,622
321 3,836,623
3,836,624

CLASS 266

20 3,836,131

CLASS 267

64R 3,836,132
69 3,836,133
152 3,836,134
162 3,836,195

CLASS 269

43 3,836,135
150 3,836,136
167 3,836,137

CLASS 270

79 3,836,138

CLASS 271

95 3,836,139

CLASS 272

54 3,836,140
79C 3,836,141

CLASS 273

1M 3,836,142
1R 3,836,143
1.5A 3,836,144
23 3,836,145
25 3,836,146
55B 3,836,147
95R 3,836,148
131AB 3,836,149
135D 3,836,150
136E 3,836,151
136F 3,836,152
173 3,836,153

CLASS 274

23R 3,836,155

CLASS 277

53 3,836,156
62 3,836,157
146 3,836,158
180 3,836,159

CLASS 280

5.32 3,836,160
6H 3,836,161
6R 3,836,162
11.35T 3,836,163
41A 3,836,164
43.12 3,836,165
124F 3,836,166
150AB 3,836,167
3,836,168
3,836,169
3,836,170
150SB 3,836,171
3,836,172
150.5 3,836,173
179R 3,836,174
209 3,836,175
213 3,836,176
269 3,836,177
415B 3,836,178
476 3,836,179
481 3,836,180

CLASS 285

55 3,836,181
114 3,836,182
363 3,836,183
417 3,836,184

CLASS 290

50 3,836,788

CLASS 292

1 3,836,185
189 3,836,186
262 3,836,187

CLASS 293

88 3,836,188

CLASS 294

1A 3,836,189
118 3,836,190

CLASS 296

1S 3,836,191
10 3,836,769
28R 3,836,192
84R 3,836,193

CLASS 297

55 3,836,194
219 3,836,196
391 3,836,197
403 3,836,198

CLASS 300

21 3,836,199

CLASS 301

6A 3,836,201
39R 3,836,202

CLASS 302

53 3,836,203
66 3,836,200

CLASS 303

6C 3,836,204
7 3,836,205
10 3,836,206
21F 3,836,207
3,836,208
3,836,209

CLASS 307

203 3,836,789
235R 3,836,790
293 3,836,791
300 3,836,792
303 3,836,793
310 3,836,796
311 3,836,797

CLASS 308

4R 3,836,210
6R 3,836,211
15 3,836,212
159 3,836,213
3,836,214
184 3,836,215
187.1 3,836,216

CLASS 310

3B 3,836,798
9.7 3,836,794
13 Re.28,161
3,836,799
70A 3,836,800
154 3,836,801
3,836,802

CLASS 312

107 3,836,217
111 3,836,218
183 3,836,219
236 3,836,220
237 3,836,221
319 3,836,222
350 3,836,223

CLASS 313

60 3,836,803
3,836,804
3,836,805
108R 3,836,806
330 3,836,807
3,836,808
465 3,836,809
484 3,836,810

CLASS 315

12 3,836,811
13C 3,836,795
18 3,836,812
3,836,813
51 3,836,814
86 3,836,815
94 3,836,816
100 3,836,817
240 3,836,818

CLASS 317

11C 3,836,819
13B 3,836,820
18D 3,836,821
21 3,836,822
100 3,836,823
3,836,825
101F 3,836,824
122 3,836,826
133 3,836,827
146 3,836,828
258 3,836,829
261 3,836,830

CLASS 318

7 3,836,831
265 3,836,832
270 3,836,833
563 3,836,834
685 3,836,835

CLASS 321

44 3,836,836
55 3,836,837

CLASS 323

7 3,836,838
20 3,836,839
22T 3,836,840

CLASS 324

5 3,836,841
34R 3,836,842
51 3,836,843
3,836,844
57PS 3,836,845
58.5B 3,836,846
62 3,836,847
67 3,836,848
71CP 3,836,849
3,836,850
112 3,836,851
123R 3,836,852
133 3,836,854
166 3,836,853

CLASS 325

113 3,836,855
187 3,836,856

CLASS 328

6 3,836,857
58 3,836,858
75 3,836,859

CLASS 330

2 3,836,860
15 3,836,861
25 3,836,862
53 3,836,863

CLASS 331

1R 3,836,864
94.5P 3,836,865
94.5Q 3,836,866
94.5R 3,836,867
94.5 3,836,868
3,836,869
3,836,870
3,836,871
107R 3,836,872
116R 3,836,873

CLASS 333

1.1 3,836,874
17 3,836,875
30 3,836,876
72 3,836,877

CLASS 335

128 3,836,878
136 3,836,879
274 3,836,880

CLASS 336

87 3,836,881

CLASS 337

102 3,836,882
163 3,836,883
3,836,884

CLASS 339

17LM 3,836,935
21R 3,836,936
3,836,937
45R 3,836,938
56 3,836,939
75R 3,836,885
91R 3,836,940
95R 3,836,941
97P 3,836,943
97R 3,836,942
99R 3,836,944
119R 3,836,945
177R 3,836,946
259R 3,836,947

CLASS 340

1R 3,836,948
3R 3,836,949
5H 3,836,950
6R 3,836,886
3,836,951
15.5BH 3,835,953
15.5CP 3,836,952
16R 3,836,953
52E 3,836,955
146.1AB 3,836,956
146.1AL 3,836,957
146.3F 3,836,958
148 3,836,959
163 3,836,887
172.5 3,836,888
3,836,889
3,836,890
3,836,891
173CA 3,836,893
173DR 3,836,892
173R 3,836,894
174TF 3,836,896
3,836,897
3,836,898
174YC 3,836,895
261 3,836,899
279 3,836,900
280 3,836,901
324AD 3,836,902
336 3,836,903
347AD 3,836,905
347DA 3,836,906
3,836,907
3,836,908
347DD 3,836,904
365C 3,836,909
365L 3,836,910
380 3,836,911

CLASS 343

5PD 3,836,960
6TV 3,836,961
6.8R 3,836,962
7PF 3,836,963
7A 3,836,964
8 3,836,965
14 3,836,966
18A 3,836,967
18E 3,836,968
100ME 3,836,972
100PE 3,836,971
100ST 3,836,969
3,836,970
113R 3,836,929
3,836,973
208 3,836,974
792.5 3,836,975
795 3,836,976
815 3,836,977
854 3,836,978
881 3,836,979

CLASS 346

22 3,836,980
74ES 3,836,981
75 3,836,912
3,836,913
3,836,914
104 3,836,915

CLASS 350

3.5 3,836,224
6 3,836,225
103 3,836,226
105 3,836,227
140 3,836,228
160LC 3,836,230
3,836,231
160 3,836,229
174 3,836,232
266 3,836,233
3,836,234
280 3,836,235
310 3,836,236
319 3,836,237

CLASS 351

36 3,836,238

CLASS 352

73 3,836,239
87 3,836,240

CLASS 353

19 3,836,241
27 3,836,242
122 3,836,243

CLASS 354

4 3,836,916
5 3,836,917
3,836,918
25 3,836,919
27 3,836,920
31 3,836,921
32 3,836,923
33 3,836,924
51 3,836,922
75 3,836,925
76 3,836,926
80 3,836,927
100 3,836,928
127 3,836,930
155 3,836,931
159 3,836,932
187 3,836,933
197 3,836,934
213 3,836,691
234 3,836,982
258 3,836,983
275 3,836,984
287 3,836,985
293 3,836,986
300 3,836,987

CLASS 355

4 3,836,244
8 3,836,245
32 3,836,246
36 3,836,247
50 3,836,248
51 3,836,249
65 3,836,250
70 3,836,251
100 3,836,252

CLASS 356

70 3,836,253
74 3,836,254
85 3,836,255
109 3,836,256
111 3,836,257
138 3,836,258
152 3,836,259
3,836,260
200 3,836,261
226 3,836,262
251 3,836,263

CLASS 357

3 3,836,988
3,836,989
6 3,836,990
15 3,836,991
23 3,836,992
27 3,836,993
38 3,836,994
46 3,836,995
3,836,996
3,836,997
53 3,836,998
63 3,836,999
65 3,837,000
3,837,001
72 3,837,002

CLASS 358

4 3,837,003
11 3,837,004

CLASS 360

92 3,836,154

CLASS 401

65 3,836,264
80 3,836,265
259 3,836,266

CLASS 403

17 3,836,267
165 3,836,268
197 3,836,269
218 3,836,270
355 3,836,271
359 3,836,272
377 3,836,273
401 3,836,274

CLASS 404

13 3,836,275

CLASS 408

67 3,836,276
75 3,836,277
199 3,836,278

CLASS 415

116 3,836,279
175 3,836,280
217 3,836,281
3,836,282

CLASS 416

96 3,836,283
132 3,836,284

CLASS 417

34 3,836,285
50 3,836,286
306 3,836,287
307 3,836,288
415 3,836,289
3,836,290
423 3,836,291

CLASS 418

63 3,836,292
83 3,836,293
91 3,836,294
126 3,836,295
142 3,836,296

CLASS 423

10 3,836,625
169 3,836,627
206 3,836,628
242 3,836,630
256 3,836,631
263 3,836,632
322 3,836,675
326 3,836,633
345 3,836,673
489 3,836,634
3,836,635

CLASS 424

49 3,836,641
62 3,836,636
70 3,836,637
78 3,836,638
89 3,836,626
101 3,836,639
108 3,836,640
121 3,836,642
175 3,836,643
180 3,836,644
3,836,645
182 3,836,646
184 3,836,647
195 3,836,648
203 3,836,649
212 3,836,650
238 3,836,629
239 3,836,651
244 3,836,652
3,836,653
248 3,836,654
253 3,836,656
258 3,836,657
267 3,836,658
268 3,836,659
269 3,836,660
3,836,661
3,836,662
273 3,836,663
3,836,664
274 3,836,665
286 3,836,655
304 3,836,666
318 3,836,667
319 3,836,668
324 3,836,671
329 3,836,669

330	3,836,670	192	3,836,301	318	3,836,308	103	3,836,677	376	3,836,686	344	3,835,579
343	3,836,672	197	3,836,302	383	3,836,309	126	3,836,679	496	3,836,687		CLASS 432
346	3,836,674	214	3,836,303	384	3,836,310	158	3,836,680	518	3,836,688	11	3,836,320
	CLASS 425	242B	3,836,304	406	3,836,311	272	3,836,681		CLASS 431	15	3,836,321
104	3,836,297		3,836,305	441	3,836,312	312	3,836,682	9	3,836,315	59	3,836,322
115	3,836,298	245	Re.28,158	451.9	3,836,314	350	3,836,678	79	3,836,316	106	3,836,323
117	Re.28,165	251	3,836,306	463	3,836,313	357	3,836,683	93	3,836,317	112	3,836,324
128	3,836,299		3,836,307		CLASS 426	361	3,836,684	202	3,836,318	241	3,836,325
165	3,836,300	316	Re.28,160	74	3,836,676	371	3,836,685	276	3,836,319		

CLASSIFICATION OF DESIGNS

D2—	24	232,785		128	232,800		40	232,815	D23—	34	232,830
	451	232,786		129	232,801	D12—	7	232,817		137	232,831
D6—	20	232,787		164	232,802		62	232,816		146	232,832
	80	232,788	D8—	45	232,803		85	232,818	D26—	5C	232,833
	86	232,789		50	232,804		142	232,819			232,834
	91	232,790		131	232,805		149	232,820			232,835
	105	232,791		136	232,806		155	232,821			232,836
	130	232,792		228	232,807		156	232,822		13R	232,837
	146	232,793		233	232,808		179	232,823			232,838
	177	232,794	D9—	45	232,809		203	232,824			232,839
	192	232,795		71	232,810			232,825			232,840
D7—	37	232,796		224	232,811			232,826			232,841
	70	232,797		246	232,812		205	232,827			232,842
	77	232,798		247	232,813	D22—	8	232,828		14B	232,843
	82	232,799	D10—	15	232,814		19	232,829		F	232,844

	G	232,845		7	232,860						
D30—	13	232,846	D56—	4B	232,861						
		232,847			232,863						
		232,848			232,864						
	41	232,849		D	232,862						
		232,850		9	232,865						
D34—	2R	232,851	D64—	11B	232,866						
	5H	232,852	D74—	1C	232,867						
	15J	232,853		2A	232,868						
		232,854	D87—	1R	232,869						
	V	232,855			232,870						
D48—	16E	232,856			232,871						
	24R	232,857			232,872						
	31	232,858		3F	232,873						
D52—	6R	232,859	D95—	A	232,874						

CLASSIFICATION OF PLANTS

P. —	38	3,617	P. —		3,618	P. —	41	3,619	P. —	43	3,620

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama 1
Alaska 2
American Samoa 3
Arizona 4
Arkansas 5
California 6
Canal Zone 7
Colorado 8
Connecticut 9
Delaware 10
District of Columbia 11
Florida 12
Georgia 13
Guam 14
Hawaii 15
Idaho 16
Illinois 17
Indiana 18
Iowa 19
Kansas 20
Kentucky 21
Louisiana 22
Maine 23
Maryland 24
Massachusetts 25
Michigan 26
Minnesota 27
Mississippi 28
Missouri 29
Montana 30
Nebraska 31
Nevada 32
New Hampshire 33
New Jersey 34
New Mexico 35
New York 36
North Carolina 37
North Dakota 38
Ohio 39
Oklahoma 40
Oregon 41
Pennsylvania 42
Puerto Rico 43
Rhode Island 44
South Carolina 45
South Dakota 46
Tennessee 47
Texas 48
Utah 49
Vermont 50
Virginia 51
Virgin Islands 52
Washington 53
West Virginia 54
Wisconsin 55
Wyoming 56
U.S. Air Force 57
U.S. Army 58
U.S. Navy 59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,835,938
3,836,102
3,836,183
2 : 3,836,570
3 : 3,836,450
4 : 3,835,494
3,835,521
3,835,541
3,835,864
3,835,904
3,836,729
3,836,890
5 : 3,835,932
3,836,041
3,836,160
6 : 3,835,474
3,835,478
3,835,479
3,835,489
3,835,491
3,835,500
3,835,538
3,835,542
3,835,545
3,835,581
3,835,592
3,835,598
3,835,621
3,835,641
3,835,692
3,835,704
3,835,718
3,835,730
3,835,731
3,835,735
3,835,737
3,835,748
3,835,800
3,835,810
3,835,812
3,835,839
3,835,840
3,835,843
3,835,847
3,835,848
3,835,852
3,835,855
3,835,858
3,835,866
3,835,869
3,835,886
3,835,900
3,835,902
3,835,906
3,835,985
3,836,007
3,836,008
3,836,030
3,836,035
3,836,036
3,836,040
3,836,053
3,836,055
3,836,059
3,836,091
3,836,094
3,836,101
3,836,113
3,836,121
3,836,124
3,836,125
3,836,133
3,836,136
3,836,141
3,836,143
3,836,152
3,836,159
3,836,162
3,836,190
3,836,193
3,836,194
3,836,226
3,836,232
3,836,236
3,836,237
3,836,268
3,836,275
3,836,277
3,836,299
3,836,332
3,836,407
3,836,409
3,836,411
3,836,420
3,836,446
3,836,451
3,836,454
3,836,464
3,836,484
3,836,524
3,836,553
3,836,561
3,836,564
3,836,638
3,836,645
3,836,681
3,836,684
3,836,702
3,836,706
3,836,714
3,836,720
3,836,741
3,836,751
3,836,754
3,836,758
3,836,769
3,836,777
3,836,782
3,836,784
3,836,791
3,836,793
3,836,795
3,836,796
3,836,821
3,836,835
3,836,841
3,836,843
3,836,846
3,836,852
3,836,861
3,836,862
3,836,865
3,836,879
3,836,886
3,836,899
3,836,926
3,836,950
3,836,951
3,836,958
3,836,959
3,836,960
3,836,961
3,836,964
3,836,966
3,836,968
3,836,971
3,836,972
3,836,976
3,836,979
3,836,998
8 : 3,835,493
3,835,586
3,835,872
3,835,940
3,836,075
3,836,082
3,836,289
3,836,462
3,836,465
3,836,716
3,836,772
3,836,774
3,836,809
3,836,826
3,836,833
3,836,923
9 : 3,835,486
3,835,488
3,835,549
3,835,694
3,835,742
3,835,779
3,835,783
3,835,834
3,835,850
3,835,854
3,835,972
3,836,031
3,836,049
3,836,065
3,836,100
3,836,116
3,836,122
3,836,200
3,836,216
3,836,225
3,836,256
3,836,282
3,836,360
3,836,366
3,836,384
3,836,424
3,836,486
3,836,587
3,836,759
3,836,805
3,836,866
3,836,867
3,836,880
3,836,917
3,836,942
10 : 3,835,511
3,835,573
3,836,342
3,836,350
3,836,369
3,836,498
3,836,557
3,836,569
3,836,610
11 : 3,836,255
3,836,766
12 : 3,835,534
3,835,561
3,835,575
3,835,664
3,835,875
3,835,942
3,836,120
3,836,148
3,836,175
3,836,279
3,836,447
3,836,463
3,836,726
3,836,850
3,836,974
13 : Re.28,166
3,835,525
3,835,615
3,835,688
3,835,797
3,835,979
3,836,046
15 : 3,835,625
3,836,690
17 : Re.28,165
3,835,495
3,835,509
3,835,543
3,835,563
3,835,568
3,835,580
3,835,585
3,835,657
3,835,675
3,835,691
3,835,713
3,835,721
3,835,722
3,835,726
3,835,744
3,835,772
3,835,784
3,835,787
3,835,807
3,835,846
3,835,851
3,835,863
3,835,881
3,835,896
3,835,957
3,835,958
3,835,965
3,835,971
3,835,984
3,835,986
3,836,003
3,836,021
3,836,023
3,836,032
3,836,034
3,836,051
3,836,105
3,836,108
3,836,115
3,836,130
3,836,132
3,836,180
3,836,202
3,836,248
3,836,249
3,836,250
3,836,251
3,836,269
3,836,314
3,836,326
3,836,338
3,836,373
3,836,391
3,836,404
3,836,414
3,836,452
3,836,494
3,836,519
3,836,544
3,836,590
3,836,629
3,836,650
3,836,677
3,836,687
3,836,703
3,836,704
3,836,730
3,836,736
3,836,747

3,836,815
3,836,910
3,836,984
18 : Re.28,162
3,835,627
3,835,698
3,835,763
3,835,941
3,835,982
3,836,093
3,836,181
3,836,263
3,836,278
3,836,482
3,836,626
3,836,654
3,836,757
3,836,823
3,836,955
19 : 3,835,503
3,835,882
3,835,898
3,836,076
3,836,109
3,836,140
3,836,145
3,836,331
3,836,655
3,836,762
3,836,797
20 : 3,835,613
3,835,628
3,836,029
3,836,056
3,836,144
3,836,151
21 : 3,835,623
3,835,835
3,835,860
3,835,861
3,836,197
3,836,453
22 : 3,835,638
3,835,924
3,836,004
3,836,853
23 : 3,835,804
24 : 3,835,484
3,835,680
3,835,703
3,835,859
3,835,870
3,836,334
3,836,419
3,836,709
3,836,734
3,836,786
3,836,836
3,836,873
3,836,894
3,836,963
25 : 3,835,532
3,835,533
3,835,537
3,835,577
3,835,650
3,835,659
3,835,674
3,835,780
3,835,837
3,835,845
3,835,931
3,835,994
3,836,028
3,836,042
3,836,080
3,836,127
3,836,134
3,836,246
3,836,252
3,836,344
3,836,365
3,836,374
3,836,403
3,836,425
3,836,477
3,836,495
3,836,619
3,836,673
3,836,732
3,836,743
3,836,779
3,836,813
3,836,814
3,836,847
3,836,889
3,836,911
3,836,925
3,836,930
3,836,931
26 : Re.28,164
3,835,480
3,835,481
3,835,485
3,835,517
3,835,524

3,835,565
3,835,571
3,835,574
3,835,589
3,835,642
3,835,647
3,835,667
3,835,678
3,835,739
3,835,757
3,835,771
3,835,827
3,835,868
3,835,890
3,835,892
3,835,897
3,835,920
3,835,988
3,836,005
3,836,048
3,836,074
3,836,097
3,836,118
3,836,128
3,836,138
3,836,150
3,836,157
3,836,161
3,836,187
3,836,188
3,836,204
3,836,209
3,836,253
3,836,272
3,836,288
3,836,371
3,836,385
3,836,415
3,836,467
3,836,502
3,836,503
3,836,530
3,836,541
3,836,566
3,836,600
3,836,617
3,836,623
3,836,637
3,836,647
3,836,657
3,836,660
3,836,661
3,836,662
3,836,685
3,836,717
3,836,763
3,836,776
3,836,788
3,836,802
3,836,870
3,836,888
3,836,891
27 : 3,835,475
3,835,482
3,835,547
3,835,569
3,835,583
3,835,836
3,835,857
3,835,862
3,835,948
3,836,077
3,836,090
3,836,224
3,836,227
3,836,242
3,836,400
3,836,491
3,836,537
3,836,851
3,836,953
28 : 3,836,119
29 : 3,835,471
3,835,502
3,835,643
3,835,720
3,835,813
3,835,927
3,835,962
3,836,018
3,836,135
3,836,203
3,836,352
3,836,572
3,836,579
3,836,612
3,836,695
30 : 3,835,682
31 : 3,835,697
3,835,814
3,836,078
3,836,137
3,836,903
33 : 3,836,329
34 : 3,835,483
3,835,582

3,835,600
3,835,619
3,835,620
3,835,640
3,835,670
3,835,760
3,835,773
3,835,775
3,835,842
3,835,853
3,835,921
3,835,930
3,835,959
3,835,990
3,835,995
3,836,037
3,836,043
3,836,044
3,836,045
3,836,050
3,836,066
3,836,079
3,836,104
3,836,177
3,836,215
3,836,243
3,836,300
3,836,304
3,836,305
3,836,324
3,836,327
3,836,333
3,836,341
3,836,396
3,836,402
3,836,457
3,836,461
3,836,474
3,836,496
3,836,500
3,836,505
3,836,511
3,836,514
3,836,516
3,836,521
3,836,536
3,836,538
3,836,542
3,836,563
3,836,571
3,836,585
3,836,595
3,836,615
3,836,620
3,836,628
3,836,634
3,836,656
3,836,659
3,836,682
3,836,683
3,836,686
3,836,696
3,836,698
3,836,719
3,836,745
3,836,767
3,836,775
3,836,825
3,836,828
3,836,845
3,836,849
3,836,863
3,836,864
3,836,898
3,836,901
3,836,918
3,836,937
3,836,941
3,836,943
3,836,944
3,836,952
3,836,969
3,836,995
3,836,996
3,836,997
36 : 3,835,504
3,835,539
3,835,540
3,835,557
3,835,564
3,835,578
3,835,588
3,835,594
3,835,596
3,835,599
3,835,601
3,835,606
3,835,645
3,835,646
3,835,724
3,835,758
3,835,781
3,835,795
3,835,809
3,835,815
3,835,871

3,835,874
3,835,905
3,835,918
3,835,975
3,835,987
3,835,998
3,836,009
3,836,024
3,836,057
3,836,111
3,836,117
3,836,123
3,836,146
3,836,179
3,836,184
3,836,189
3,836,223
3,836,230
3,836,231
3,836,238
3,836,239
3,836,244
3,836,258
3,836,265
3,836,290
3,836,340
3,836,354
3,836,358
3,836,362
3,836,364
3,836,423
3,836,427
3,836,428
3,836,478
3,836,510
3,836,512
3,836,556
3,836,559
3,836,560
3,836,581
3,836,598
3,836,609
3,836,611
3,836,640
3,836,651
3,836,669
3,836,672
3,836,678
3,836,697
3,836,711
3,836,712
3,836,735
3,836,761
3,836,768
3,836,773
3,836,789
3,836,798
3,836,812
3,836,818
3,836,819
3,836,824
3,836,829
3,836,840
3,836,872
3,836,896
3,836,907
3,836,912
3,836,916
3,836,927
3,836,929
3,836,933
3,836,957
3,836,962
3,836,973
3,836,977
3,836,982
3,836,983
3,836,987
3,836,992
37 : 3,835,608
3,835,639
3,836,198
3,836,335
3,836,426
3,836,621
3,836,694
39 : Re.28,158
3,835,472
3,835,497
3,835,507
3,835,516
3,835,526
3,835,527
3,835,528
3,835,535
3,835,591
3,835,597
3,835,614
3,835,617
3,835,622
3,835,637
3,835,660
3,835,661
3,835,683
3,835,702
3,835,711

3,835,719
3,835,723
3,835,776
3,835,777
3,835,785
3,835,879
3,835,880
3,835,887
3,835,899
3,835,913
3,835,949
3,835,955
3,835,961
3,835,967
3,835,977
3,835,978
3,835,980
3,835,991
3,835,999
3,836,001
3,836,083
3,836,089
3,836,112
3,836,114
3,836,131
3,836,182
3,836,221
3,836,280
3,836,307
3,836,312
3,836,315
3,836,320
3,836,345
3,836,346
3,836,359
3,836,363
3,836,372
3,836,387
3,836,393
3,836,412
3,836,469
3,836,470
3,836,471
3,836,487
3,836,513
3,836,543
3,836,555
3,836,602
3,836,614
3,836,689
3,836,700
3,836,742
3,836,790
3,836,820
3,836,838
3,836,854
3,836,868
3,836,869
3,836,871
3,836,913
3,836,914
3,836,936
3,836,938
3,836,980
40 : 3,835,554
3,835,738
3,835,816
3,835,889
3,835,909
3,836,069
3,836,092
3,836,235
3,836,476
3,836,480
3,836,592
41 : 3,835,487
3,835,505
3,835,567
3,835,587
3,835,806
3,836,176
3,836,186
3,836,228
3,836,416
3,836,624
3,836,737
3,836,811
3,836,855
42 : Re.28,159
3,835,513
3,835,514
3,835,520
3,835,548
3,835,552
3,835,562
3,835,604
3,835,666
3,835,672
3,835,681
3,835,685
3,835,693
3,835,696
3,835,699
3,835,706
3,835,717
3,835,736

3,835,743
3,835,754
3,835,782
3,835,788
3,835,819
3,835,935
3,836,013
3,836,064
3,836,081
3,836,088
3,836,149
3,836,158
3,836,281
3,836,287
3,836,297
3,836,302
3,836,349
3,836,351
3,836,353
3,836,356
3,836,386
3,836,388
3,836,389
3,836,397
3,836,405
3,836,429
3,836,430
3,836,468
3,836,506
3,836,523
3,836,529
3,836,532
3,836,533
3,836,580
3,836,589
3,836,596
3,836,599
3,836,603
3,836,606
3,836,608
3,836,618
3,836,639
3,836,658
3,836,670
3,836,740
3,836,750
3,836,753
3,836,792
3,836,839
3,836,844
3,836,882
3,836,904
3,836,905
3,836,939
3,836,947
3,836,956
3,836,994
3,837,003
3,837,004
43 : 3,835,635
3,836,728
44 : 3,835,751
3,836,517
45 : 3,835,618
3,835,634
3,835,746
3,835,993
3,836,421
3,836,848
3,836,915
46 : 3,835,727
47 : 3,835,590
3,835,969
3,836,153
3,836,173
3,836,185
3,836,434
3,836,518
3,836,674
3,836,834
48 : 3,835,522
3,835,530
3,835,653
3,835,655
3,835,656
3,835,665
3,835,695
3,835,786
3,835,925
3,835,926
3,835,928
3,835,929
3,835,939
3,835,953
3,835,974
3,836,015
3,836,085
3,836,174
3,836,285
3,836,399
3,836,410
3,836,417
3,836,455
3,836,458
3,836,459
3,836,485

3,836,488
3,836,699
3,836,738
3,836,935
3,836,991
49 : 3,835,553
3,836,006
3,836,027
3,836,443
50 : 3,836,058
3,836,892
51 : 3,835,651
3,835,791
3,835,992
3,836,038
3,836,071
3,836,147
3,836,308
3,836,781
3,836,967
53 : 3,835,933
3,836,010
3,836,099
3,836,271
3,836,418
3,836,460
54 : 3,836,442
3,836,509
55 : 3,835,570
3,835,629
3,835,652
3,835,676
3,835,708
3,835,752
3,835,767
3,835,769
3,835,792
3,835,799
3,835,822
3,835,823
3,835,849
3,835,865
3,835,876
3,835,947
3,836,012
3,836,025
3,836,039
3,836,052
3,836,106
3,836,126
3,836,313
3,836,380
3,836,534
3,836,679
3,836,713
3,836,765
3,836,778

Design Patents

4 : 232,850
6 : 232,785
232,787
232,795
232,799
232,806
232,810
232,815
232,818
232,827
232,849
232,869
9 : 232,846
12 : 232,794
232,797
17 : 232,802
232,803
232,812
18 : 232,830
232,848
20 : 232,823
232,831
25 : 232,856
26 : 232,813
232,817
232,820
232,852
232,872
27 : 232,801
232,808
232,822
232,874
29 : 232,832
33 : 232,798
34 : 232,788
232,845
232,853
232,854
232,855
232,866
35 : 232,811
36 : 232,804
232,809
232,843
232,868
232,873
37 : 232,859
38 : 232,828
39 : 232,792
232,819
232,821
232,824
232,825
232,826
232,844
232,858
232,870
44 : 232,786
47 : 232,857
48 : 232,796
232,829
232,871
51 : 232,837
232,838
232,839
232,840
232,841
232,842
55 : 232,789
232,791
232,805
232,851

Plant Patents

6 : 3,617
3,618
3,619
3,620

U. S. GOVERNMENT PRINTING OFFICE : O - 1974

U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, *Secretary*

PATENT OFFICE
C. Marshall Dann, *Commissioner*